JANUARY 18, 1954

NEWS ISSUE

Electrical World

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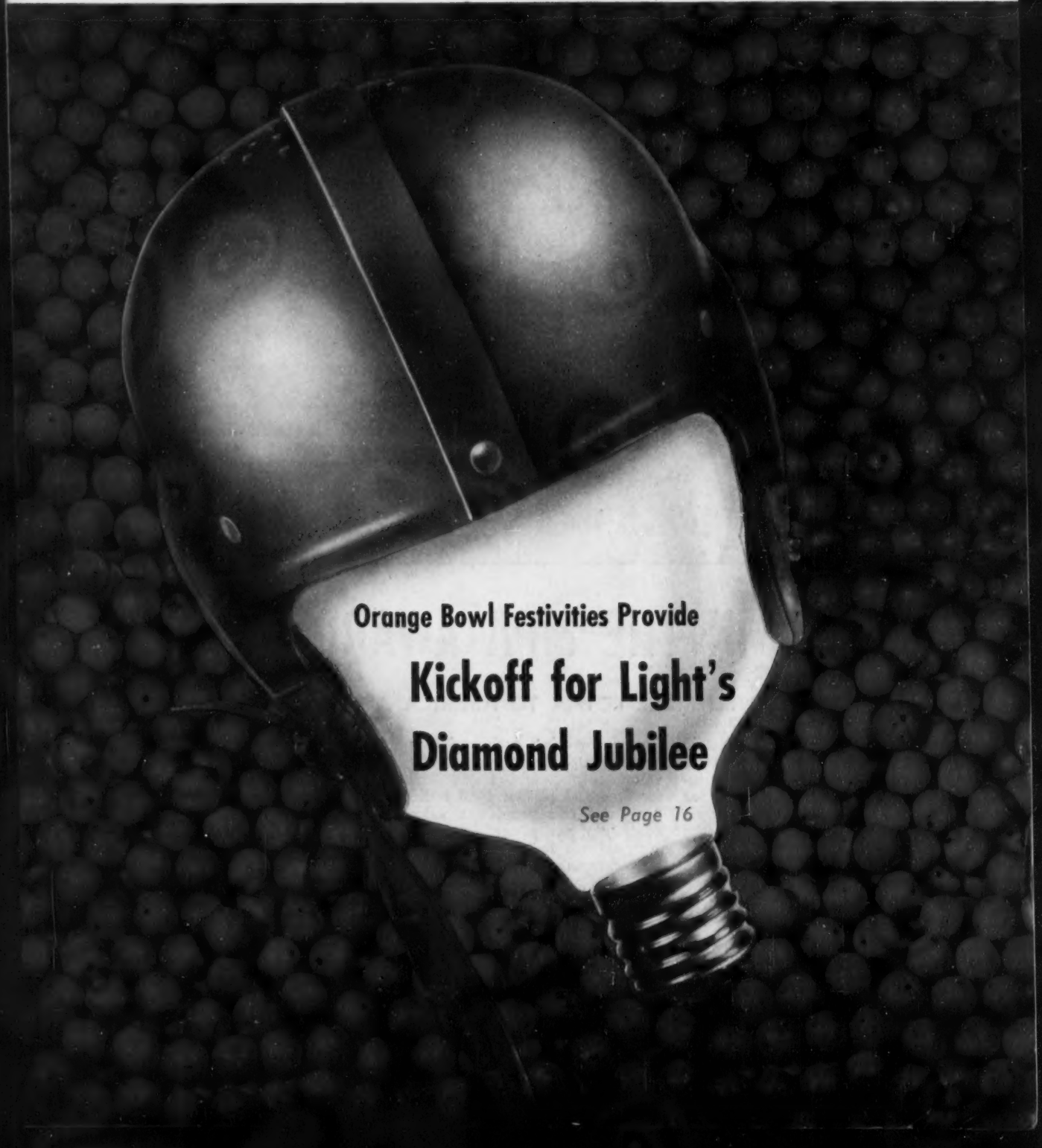


Orange Bowl Festivities Provide

Kickoff for Light's Diamond Jubilee

See Page 16

INCREASED ENERGY SALES receive recognition by the MPA Award. Shown (left to right) at last year's presentation are: Harry Restofski, Chairman of EEI Awards Committee, winners Ray Wyman, Cleveland Electric Illuminating Co., L. M. Holmes, Dayton Power & Light Co., and K. H. Runkle, General Electric Co.

ARE YOU IN THE MPA AWARD PICTURE?

ENTRIES FOR EEI MORE POWER TO AMERICA AWARD CLOSE FEB. 1

Competition for the Edison Electric Institute's More Power to America Award offers the electric utility industry an unusual opportunity for national recognition of this year's outstanding industrial development and power sales activities.

VALUABLE ANALYSIS

As reserve capacity returned to near normal, utility power sales programs reached new highs. Thus, many companies are in an excellent position to document their sales effort in competition for the MPA Award. Entries covering such activities as productivity forums, industrial development, consulting and mailing services and similar load building programs can provide a valuable analysis of past programs as well as a significant foundation for future sales campaigns.

ENTER A SUMMARY

If your company launched or strengthened industrial power development during 1953, all that is needed to enter is a brief summary of sales organization, objectives, and performance. Entries close Feb. 1.

Aside from the potential direct benefits to entrants for the award, the entire industry will gain through sharing and implementing new avenues to industrial electrification—the fundamental first step to a sound productive economy. For more details write for GEZ-850, Section 301-251, General Electric Company, Schenectady 5, N. Y.

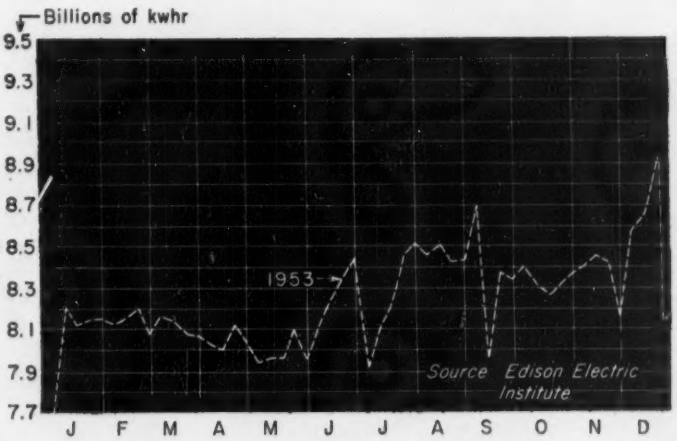
MORE POWER TO AMERICA

GENERAL ELECTRIC

VOLUME 141, NO. 3

January 18, 1954

Electrical World



Output Week Ended Jan. 9—8,824,801,000 Kwhr

Per Cent Change From Previous Year

	Total US	New Eng.	Mid. Atlan.	Cent. Ind.	West Cent.	South-east	South Cent.	Rocky Mount.	Pacific NW	Pacific SW
Jan. 9	+7.8	+4.3	+5.4	—0.3	+6.0	+17.5	+5.6	+9.7	+26.9	+8.7
Jan. 2	+6.3	+1.8	+7.6	—1.3	+6.6	+14.8	+4.5	+8.3	+28.9	+5.0
Dec. 26	+8.3	+5.0	+3.3	+0.7	+8.2	+22.5	+2.5	+8.1	+27.5	+5.3

Electric Power Statistics

		Latest Month	Preceding Month	Year Ago
Peak Load (Million Kw)	Oct.	76.9	77.2	71.1
Capacity (Million Kw)	Nov.	89.81	88.62	80.91
Production (Billion Kwhr)	Oct.	37.61	37.04	34.87
Hydro	Oct.	7.14	7.59	7.02
Fuel	Oct.	30.48	29.45	27.85
Fuel Consumption				
Coal (Million Tons)	Nov.	10.17	10.22	9.95
Oil (Million Barrels)	Nov.	6.91	6.78	7.77
Gas (Billion Cu Ft)	Nov.	81.13	96.85	69.17
Sales (Billion Kwhr)	Oct.	32.21	32.64	30.15
Residential	Oct.	8.70	8.55	7.72
Commercial	Oct.	5.62	5.90	5.09
Industrial	Oct.	15.56	15.67	15.16
Other	Oct.	2.33	2.51	2.17
Net Income Class A & B Companies ($ Million)	Oct.	76.19	81.17	65.94
Estimated Dec '54 Peak (Million Kw)	Oct.	94.8	95.0	95.7
Kwhr per Residential Customer (12 Month Average)	Oct.	2,318	2,303	2,144
Revenue per Kwhr Residential Service (12 Month Average)	Oct.	2.75¢	2.76¢	2.77¢
Canadian Production (Billion Kwhr)	Oct.	5.51	5.09	5.42

Business Statistics

FRB Industrial Production Index†	Nov.	130*	132	133
Gross National Product Annual Rate ($ Billion)	3rd Qtr.	369.0	372.4	345.3
EW 4 Industry Production Index†	Nov.	122.1	124.0	124.1
ENR Construction Cost Index††	Jan.	128.7	128.2	123.1
BLS Consumer's Price Index	Nov.	115.0	115.4	114.3
NEMA Insulation Materials Sales Index†	Oct.	154	153	161
NEMA Electric Appliance Sales Index†	Oct.	91	101	113
NEMA Household Refrig. Sales Index†	Oct.	46	62	62

* Preliminary ** Revised †1947-49=100 ††1949=100

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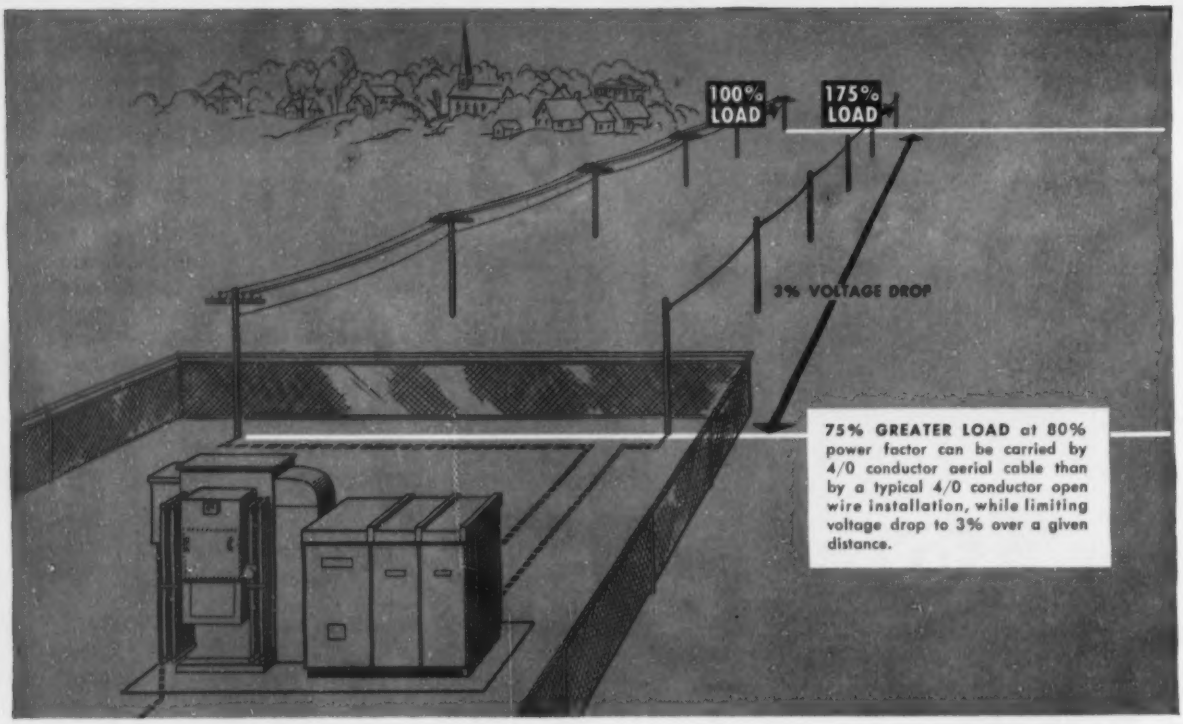
Electrical World
Vol. 141, No. 3
January 18, 1954

Published weekly by McGraw-Hill Publishing Company, Inc., James H. McGraw (1860-1948), Founder. **Publication Office, 99-129 N. Broadway, Albany 1, N. Y. Executive, Editorial and Advertising Office: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** Donald C. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Paul Montgomery, Senior Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.

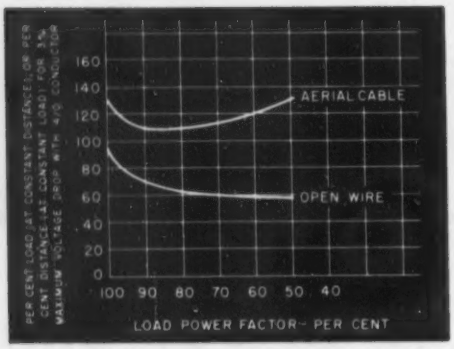
Subscriptions: Address correspondence to Electrical World—Subscription Service, 99-129 North Broadway, Albany 1, N. Y. or 330 W. 42nd St., New York 36, N. Y. Allow one month for change of address.

Subscriptions are accepted only from executive, supervisory, and engineering personnel in electric utilities, manufacturing companies, and related fields. Position and company connection must be indicated on subscription orders.

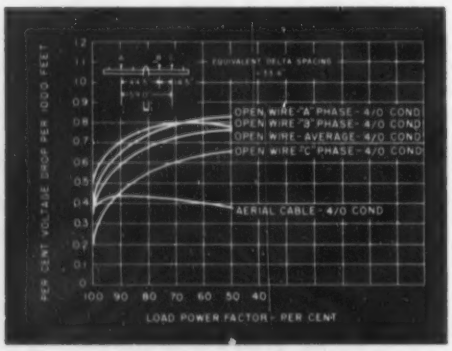
Single copies 35¢. For the United States and possessions $6 a year, $9 for two years, $12 for three years. Canada, $7 for one year, $11 for two years, $14 for three years. (Canadian money, at par.) Other Western Hemisphere, $15 for one year, $25 for two years, $30 for three years. All other countries $25 for one year, $40 for two years, $50 for three years. Entered as second-class matter, November 16, 1936, at the Post Office at Albany, N. Y., under the Act of March 3, 1879. Printed in USA. Copyright 1954, by McGraw-Hill Publishing Company, Inc. Permission required to reproduce any of contents.


100% LOAD
175% LOAD
3% VOLTAGE DROP
75% GREATER LOAD at 80% power factor can be carried by 4/0 conductor aerial cable than by a typical 4/0 conductor open wire installation, while limiting voltage drop to 3% over a given distance.

WHERE VOLTAGE DROP SETS CIRCUIT LOAD LIMITS...



Comparison of load-carrying ability over a constant distance at 4.16 kv, 4/0 aerial cable vs. 4/0 open wire.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GENERAL ELECTRIC

THE ELECTRICAL WEEK

The Issue's News Highlights—Operation of an atomic submarine is scheduled for late this year. Credit for getting the job done belongs largely to Admiral Rickover who bossed the project, which will provide know-how useful in building a commercial nuclear power plant.

Federal power budget which Eisenhower will send to Congress is expected to be more modest than those of Democratic Administrations . . . REA approves a loan to Michigan co-op for construction of "G&T" facilities.

Unlike the snowy cold that struck the Northeast last week, the atmosphere in Miami was hot and charged. The place was the 12th annual meeting of National Rural Electric Cooperative Association. The occasion was a panel debate involving Clyde T. Ellis, NRECA executive manager, and Fred G. Aandahl, assistant Interior secretary, who turned on the space heater. He quoted Ellis as saying this at Portland, Ore., Nov. 17: "Appeals to Congress have been equally fruitless during the past several years. It seems practically impossible to impress upon the members that the government has assumed the responsibility of wholesale power supply and, therefore, must prepare to carry out its program and meet the demands of the area."

Said Aandahl: "An opinion such as this certainly points in the direction of a strong trend toward federal monopoly of the electric power business . . . I am deeply disturbed when I see those who are crusaders for a federal power monopoly try to use the rural electric cooperatives to foster federal monopoly."

Said Ellis: "To whom do you refer?"

Said Aandahl: "I mentioned no one by name. I referred to anyone who is promoting a government responsibility in supplying electrical energy in addition to that which comes from the hydroelectric plants that are associated with multipurpose water development projects or the single purpose projects closely associated with them."

Said Ellis: "I know of no one throughout rural America . . . who advocates a federal monopoly of the power business. I do not advocate it. I don't believe in a federal monopoly in the power industry."

Pacific P&L and Mountain States Power have merged, subject to approval of stockholders, state and regulatory bodies. Basis for exchange will be nine shares of Pacific common for each ten shares of Mountain States and one share of Pacific $100 par preferred for each two shares of Mountain States $50 par preferred.

A small two-engine plane crashed on takeoff through two 138-kv lines of Los Angeles Department of Water and Power Jan. 10. Plane's two occupants survived but one resident of a house damaged by falling plane died of burns. No outage occurred on the belt system. Falling conductors, however, knocked out 34.5 kv lines of the department and the City of Burbank, interrupting service to small industrial users in the area.

Off the Washington Wire . . . Congress is off to a slow start on power matters. Hearings are still to be scheduled on such important items as: (1) Further power development at Niagara Falls; (2) Revisions of Atomic Energy Act to permit private development of nuclear power; and (3) Changes in TVA contracts to permit customers to obtain power from non-TVA sources.

A House Interior committee, however, is scheduled this week to hear members of the five-state Upper Colorado River Commission back construction of Echo Park and other dams in the basin.

The 33,250-kw Pole Hill Power Plant in Colorado is on the line. Pole Hill is one of two new hydro plants in Reclamation's Colorado-Big Thompson Project.

Reorganization of the Washington office of Bureau of Reclamation will reduce staff to 245 persons, compared with a staff of 302 last July. Fifteen positions will be transferred to the Denver regional office, seven will be shifted from Denver to Washington, and 40 will be eliminated. S. W. Crosthwait has been named Assistant Commissioner of Reclamation, to be stationed in Washington.

Proposed merger between Washington Water Power and Puget Sound P&L no longer has the approval of Washington PSC, its chairman, E. W. Anderson, asserted. Anderson, through the state's Attorney General, asked dismissal of a court action (see page 63) seeking review of PSC's approval of the merger. He explained the approval expired with the Nov. 19 deadline for the merger plan. Any new agreement, he said, must be taken up as a new issue.

Montana Power Co purchased natural gas properties in Great Falls-Havre area from Montana-Dakota Utilities Co for about $6.5 million.

Power for West Berlin can no longer be cut off by the Russians for political purposes—the new 50,000-kw unit at the Ernst Reuter Power Station has gone on the line, making the sector independent of supply from the East. The installation brings West Berlin's capacity up to 258,000 kw.

New plant installed by British Electricity Authority in 1953 provided an additional capacity of 1,413,000 kw, compared with 1,539,000 kw added in 1952 and 1,113,000 kw in 1951.

New hydro developments in Canada during 1953 added 638,012 hp to installed capacity, bringing the total to 14,921,459 hp. Plants and extensions now being built will add a record-breaking 1.5 million hp more in 1954, the government predicts.

Central Maine Power Co is appealing recent $1,422,000 rate increase granted by the state's PUC to the Maine Supreme Court. Company had requested an annual increase of $3,284,389 (EW, Dec. 21, p 47).

Rear Adm Hyman G. Rickover, the sharp-tongued naval officer who knocks heads together to get things done, is the man behind . . .

Nuclear Reactors for Navy, Industry

The first atomic submarine, which will be launched at Groton, Conn., this week, is to be fitted out with an engine that could be the forerunner of an entirely new source of industrial power.

Some Navy experts look to the nuclear-fueled plant as the great innovation in maritime propulsion since sails gave way to steam. Its significance may be as great to the electric power industry. For if the new power source can whirl the shaft of the submarine Nautilus, it can just as easily turn a central station turbine.

Rickover in Charge . . . There is a further point of interest to the power industry: The same man, Rear Adm Hyman G. Rickover, who directed work on the Nautilus, is charged with building the first utility-sized nuclear power plant. Westinghouse Electric Corp, which built the Nautilus power plant, will build the utility-sized plant under Rickover's direction.

First trial run of the Nautilus is scheduled for late this year. The nuclear reactor, which will power the craft, is still to be placed in the hull. But sufficient tests have already been conducted with a land-based prototype of the engine to convince experts of its workability.

While the Navy reactor makes sizable contributions to power reactor technology, it is still far short of a specific answer for a new source of industrial power. Propulsion unit of the Nautilus will develop an estimated 15,000-18,000 kw and cost around $25 million. On this basis, a rough guess is that the cost per kw of installed capacity will run around $14,000—or some 70 times the cost of a modern steam power plant.

Low Temperature, Slow Speed . . . Using water under pressure as the moderator and the heat transfer agent, the first submarine reactor is a low-temperature, slow-speed apparatus as compared to recent central station units. In temperature and pressure, it would represent some retrenchment in the modern technology of coal-fueled plants which have been pushing toward higher temperatures and pressures.

Theoretically, the sub's Pressurized Water Reactor (PWR) could be operated at temperatures up to 700 F, but pressures needed for this would be ruled out by design requirements.

Launches Crusade . . . Credit for "expediting" the submarine into being goes in large measure to the indomitable Rickover, who turned a mission into a "crash" program. His crusade to equip the Navy with an atomic submarine got under way in 1947 after he and four other Naval officers had studied reactor technique at the Oak Ridge, Tenn., laboratories.

Rickover had spent his early years in the Navy as electrical officer on some of the larger battleships. His interest and competence in this field led him to postgraduate studies at the Naval Academy and Columbia University, where he acquired an MS degree in electrical engineering.

During World War II, Rickover was a key man in the electrical section of the Bureau of Ships. His main contribution was spearheading the development of new shock-resistant equipment which would better withstand the damaging blows of modern weapons. He became head of the section with the rank of Captain.

During the tour in the electrical section, as well as before and since, the sharp-tongued Captain knocked plenty of heads together. He has never gone to much trouble to endear himself to his fellow officers or with others in his sphere of operations.

Escapes Retirement . . . Rickover's Naval career barely escaped an unceremonious end when two selection boards, manned by his superiors, declined to recommend his promotion to Rear Admiral. Traditionally an officer is expected to retire within a year after being "passed over" twice.

Congress and the White House were forced to move in to assure the promotion. This action followed a display of public pressure greatly influenced by Rickover's success in the atomic submarine program.

Hard Workers . . . It is a Rickover axiom that results are in direct proportion to the amount of effort expended. He and his staff have no fixed working hours, except perhaps

a 50-or-60 hour per week minimum. In the same way, he drives his contractors and subcontractors. His 20-man "expediting" staff lives close to the construction work with plenty of authority to crack bottlenecks.

These methods, which, as any contractor well knows, are outrageously expensive, have contributed greatly to the near-miracle of an operating submarine this year—instead of next year or five years from now.

A second atomic submarine, also conceived and brought under construction in the past five years, is under Rickover's direction. That one, for which General Electric Co is building the reactor, will be radically different from the first. Instead of a pressurized water moderator, it will use a liquid metal like sodium. It will operate at higher temperatures.

Besides these two atomic subs, Rickover also had under his wing the development of a much larger reactor for use on a surface vessel. When the project was dropped from the budget by Defense Department, Atomic Energy Commission said it would provide funds to "advance" reactor technology for both commercial power production and propulsion of capital ships. Then last October AEC announced it had engaged Westinghouse to build an industrial power reactor and put Rickover in charge of the project.

The question then arose whether a career military man like Rickover could build a reactor at costs which would have some significance to industrial power production.

Thrift Is an Issue . . . Rickover partisans believe he is the man for the job. They point to a "thrifty" trait that he often displayed during his early career as an officer. They believe that his undisputed reputation as a man who gets things done applies equally whether he has the monetary resources of the Navy and AEC behind him, or is working with a cramped budget on the industrial power reactor.

Some members of the Joint Congressional Committee are not so sure. They promise to look at the matter more closely in two or three closed-door sessions early this year. It's a good bet, too, that AEC will demand that Rickover account strictly for his expenditures and stay within a still secret top cost estimate for the power reactor.

'Modest' U.S. Power Budget . . .

. . . is expected for federal development program when President Eisenhower delivers his budget message to Congress

Scope of the federal power development program under the Eisenhower Administration will be spelled out in the budget message due to go to Congress this week.

Prohibition against "new starts" on hydroelectric projects is expected to be eased, but the economy drive will continue. Best guess is that the power budget will be on a more modest scale than those presented by former Democratic Administrations.

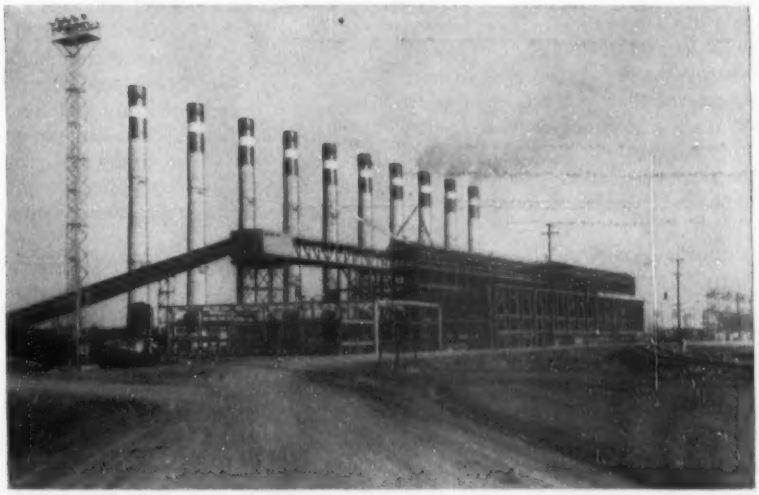
Outlines Proposals . . . President Eisenhower, in his State of the Union Message, gave no more than a general outline of legislative proposals which may affect electric utility operations. Of particular interest are:

- Proposed revision of present revenue laws to liberalize treatment of plant depreciation for tax purposes. This would carry the principle of the emergency-born fast tax write-off over into permanent legislation.
- Plans to initiate construction on 23 waterway projects, some of which may contain hydroelectric features.
- A promise to submit at a future time specific recommendations for a "uniform and consistent water resources policy."

Unexpectedly missing from the message was a recommendation that the Atomic Energy Act be changed to permit industrial development of nuclear power. However, the President made it clear that the list of legislative proposals presented in the message were not exclusive, and others would be added from time to time.

It is known that specific revisions of the act, which would permit private enterprise to own or control nuclear reactors and the fuel to power them, are now being studied by executive agencies.

Tax Law Changes . . . In calling for liberalization of the tax laws to en-



Shawnee's 4th Unit Is Put in Service

Commercial operation of Unit 4 of Tennessee Valley Authority's Shawnee Plant at Paducah, Ky., was started on Jan. 8. A general view of the powerhouse from the southwest is shown above.

The new unit, with a capability of 150,000 kw, is part of a ten-unit plant which will supply power to Atomic Energy Commission's Paducah plant. The first four units are now pouring 600,000 kw into the TVA system and work is progressing on Units 5 and 6. All six uncompleted units are scheduled to be in operation by July, 1955.

courage expansion and modernization of plants, the President noted that the House Ways and Means Committee and the Treasury Department have already laid the ground work for such proposals. The committee staff working with Treasury officials is understood to be ready to recommend a method under which two-thirds of the cost of a facility could be amortized for tax purposes in half its normal life. Under the fast"tax amortization program during Korean crisis, electric utilities were allowed to write off between 40 and 45% of the cost for tax purposes during a five-year period.

The new proposal, if adopted, would be applicable to all new industrial expansion.

Only the budget drafters knew last week where the 23 new waterway projects would be started or what type they would be. Signs point to the probability that most of them had been selected from the rivers and harbors and flood control projects of the Army Corps of Engineers. It is likely many of the 23 "new starts" will be small jobs that can be completed in about one year without the necessity of coming back for a second appropriation. Few power projects would qualify under those limitations.

Local Reserve Development . . . Except that more effort will be made to gain the cooperation of local interests in resource development, President Eisenhower gave little hint as to power aspects of the forthcoming proposals on a uniform water resources policy. It is expected to differ widely from the recommendations of the Truman-appointed Water Resources Policy Commission which proposed a number of regional authorities on the Tennessee Valley Authority pattern.

Interior Marketing Policy Endorsed by President

Interior Department's policy for marketing power in the Missouri River Basin—hotly criticized by co-op groups—has the strong personal endorsement of President Eisenhower.

The marketing criteria covers new federal projects in the basin. A senate subcommittee last December conducted a four-day hearing on the criteria. Chief criticism was that the new rules would harm the purchasing position of co-ops and public bodies.

In a White House letter made public recently, the President wrote, "It is clear that no preference customer's rights could possibly be jeopardized."

"In the interest of every taxpayer, it is essential that when the new power in the Missouri Basin comes into production in 1954, such power be put to use and converted into revenue forthwith."

The latter was, in part, a reply to a request by 28 senators that the effect date of the marketing criteria be postponed from Jan. 1 to April 1.

President Eisenhower said the Jan. 1 date was significant only as it applied to a request for preference customers to supply preliminary power requirements data. There will be plenty of time for this data to be changed or for Congress to examine the policy before contracts are drawn, he said.

He reiterated previous Interior Department assurances that the future needs of preference customers would be met by the device of short term contracts with non-preference customers. These contracts would expire as preference customer needs expand.

Atlantic City Boardwalk Goes Fluorescent

First formal event of Atlantic City's Centennial Celebration and Light's Diamond Jubilee was dedication of a new lighting system (above) for a two-mile stretch of the city's famed boardwalk. Assisting city officials at the ceremonies held this month were Charles Hagan, vice president of Atlantic City Electric Co, and Emery W. Loomis, vice president, Atlantic Region, Westinghouse Electric Corp.

One hundred twenty-three 33,000 lumen fluorescent mercury lamps mounted on 30-ft and 24-ft poles replace incandescents hung 18 ft high. The new units give four to five times the light provided by the old system, yet use only slightly more electricity.

TVA Production Workers Receive Wage Increase

The Tennessee Valley Authority has approved an annual wage increase ranging from 2½¢ to 17½¢ an hour for its 14,000 production workers.

Announcement of the increase came from John Oliver, general manager of TVA, immediately following the authority board's approval of the wage hike on Jan. 8.

This hourly increase, effective Jan. 3, applies to all TVA production workers. Biggest increases go to boiler makers and millwrights, who received 15¢ and 17½¢ per hour, respectively. Increases for most of workers range between 2½¢ and 12½¢.

The negotiations, concluded Jan. 7, were conducted by TVA and the Trades and Labor Council consisting of representatives of the American Federation of Labor's 15 craft unions. The negotiations covered all the authority's production workers except those at the Shawnee Plant at Paducah, Ky., where TVA negotiates separate wage rates.

REA OK's Loan . . .

. . . for Michigan Cooperative to build generating and transmission facilities

Rural Electrification Administration has approved a $8,257,000 loan for construction of generating and transmission facilities—first new loan of this type approved since the Republicans assumed control of REA last year.

Loan was made to the Alger-Delta Electric Cooperative Association of Gladstone, Mich. A 15,000-kw generating plant, 92 miles of 34.5 kv transmission lines, and 885 miles of distribution line are to be built with the funds.

REA said the loan would make it possible to bring electric service for the first time to about 3,400 consumers and to improve existing service for approximately 5,000 consumers in areas of Alger, Delta, Schoolcraft, Menominee, and Marquette counties in Michigan.

In the past, the co-ops and the towns of Escanaba and Gladstone have been purchasing power from the Mead Corp through its subsidiaries. Upper Michigan Power & Light Co and Escanaba Paper Co. These customers have been notified that present wholesale power contracts will not be renewed because the entire output of the existing system will be used by the paper company. As a result, the company plans to get out of the utility business.

Conditions under the loan approved by REA call for the co-op to connect 2,483 new consumers to its existing lines and 936 new consumers to facilities of the Upper Michigan P&L which the co-op will acquire. Facilities to be acquired from the utility include 18 miles of 33-kv transmission line and 312 miles of distribution line serving 2,512 consumers.

Power Export Authorized

Niagara Mohawk Power Corp may export to Canada up to 250 million kwhr annually under authority recently granted by Federal Power Commission. The energy is to be transmitted to the Hydro-Electric Power Commission of Ontario over facilities of the St. Lawrence River Power Co of Massena, N. Y. The power will be exported at a maximum rate of 50,000 kw and will be delivered to the Ontario Commission at the Cornwall substation located on the north bank of the St. Lawrence River opposite Massena. Federal Power Commission said that the export of energy will not impair the sufficiency of the electric supply within the United States.

Niagara Mohawk Power now receives electric energy from the Ontario Commission.

Edison Electric Institute Issues New Output Index

Edison Electric Institute began last week using a new method of reporting weekly electric output statistics which makes provision for seasonal adjustments.

The new index uses the three-year average output for the years 1947-49 with an index value of 100. The base period is the same as that of the recently announced Federal Reserve Board revised index of industrial production. In announcing the change EEI said, "The new index will eventually afford direct comparisons of long-term growth trends as well as the shorter-term pulse beats of the electric utility industry with those of the overall national economy and its principle segments—a comparison that was not previously possible."

From a technical standpoint, the new index results from adjustment of weekly reported output values for normal seasonal and holiday variations only and expresses the adjusted values in per cent of the 1947-49 average. For this reason the new index is a reflection of the growth of the industry and effects of changing business conditions, major work stoppages, and abnormal or non-seasonal weather.

Kansas City P&L Makes It 250,000

H. B. Munsell, president of Kansas City Power & Light Co, holds a gold-plated, engraved service meter installed for the company's 250,000th electric customer, Mr and Mrs Gene Miller. Left to right are the Millers; their son Bobby; E. L. Godshalk, Kansas City P&L vice president; Munsell; and F. J. Gunther, superintendent of operations.

IN THE INDUSTRY

Northwest Asks: How Will Pearl Run Bonneville?

Dr William A. Pearl, who last week took over the job of Bonneville Power Administrator from Dr Paul Raver, ran smack into the Northwest's public-private power controversy when his name was proposed by Interior Secretary McKay.

But now the thing has simmered down, and public power, which exhibited some uneasiness, seems content to reserve judgment until Pearl is firmly in the saddle and able to direct which way the hoss is going. Private power is waiting, too.

In the lull, EW decided to interview the new Administrator to find out how his thinking goes.

We noted at the outset that Gus Norwood, secretary of Northwest Public Power Association, had said Dr Pearl was "thoroughly earmarked as sponsored by the private power companies."

Dr Pearl said he was surprised, that he had never been a "private power man," either in his recent capacity as head of Washington State College Institute of Technology, or before. "But," he added quickly, "neither was I ever a public power man."

Strong Backing . . . When he announced the appointment, Secretary McKay said flatly that Pearl was the best man he could possibly get for the job. "He's had 10 years' business experience besides all kinds of engineering experience, including research in the power field."

At the same time, McKay said there was no reason to expect any major changes at Bonneville with the coming of a new administrator as the new federal power policy had already been set. Some operations, particularly the promotion of public power agencies, he said, would be curtailed to match the new direction for partnership development of the Columbia Basin.

Pearl told EW: "I think the Pacific Northwest seems to have a feeling that something funny is going to happen. I can't believe it. After all, those men back in Washington—McKay, Tudor, Smith—they're all from out here in the West."

The new administrator said emphatically that he had no "pre-cooked ideas" about Bonneville, backbone of the Northwest Power Pool, or how he shall run it.

"Basically," he said, "I am interested in the development of the Northwest and in development of power so the Northwest will develop in a sound and healthy manner, to the best interests of the people. Decisions should be based on facts, not hearsay. After I'm at Bonneville for a while, I'll have the facts."

Something They Want . . . Pearl told EW he hadn't solicited the job but had been picked because Interior administrators felt that, judging from his experience, he had something they wanted.

"I'm not going in biased or with an axe to grind," he commented. "But I intend to work with the men above me . . . I think President Eisenhower's 'partnership' plan is a happy medium."

Holding Their Charges . . . As Pearl stepped in at Bonneville, most public power spokesmen were inclined to let him get on with the job before tilting any lances in his direction.

At least one PUD—that in Cowlitz County, Wash.—didn't like Norwood's initial comments. They sent a letter congratulating Pearl on his appointment and said, "For many years our utility, as a customer, has had successful relations with Bonneville Power Administration, and we hope that these may continue under your regime."

Pearl's regime has begun. He has a fine opportunity to make a great contribution to the power development of the Northwest.

TECHNICAL NOTES

ARCHER E. KNOWLTON

Unnecessary duplications and backups required by state boiler codes give a false sense of security. Implication is that the codes fail to recognize high-pressure reliability.

Circulating water pumps generally have low breakaway torque and low or medium inertia. Torque at full speed and shut-off condition is less than for full load; normal starting torque motors may therefore be used.

Equal d.c. resistance requires that the circular mil size of an aluminum conductor must be 1.64 times the corresponding copper figure. This is the same as saying the aluminum must be two AWG sizes larger.

Sleet melting would probably be more difficult to accomplish on a bundled conductor line because of the 40% increase in heat dissipating surface over that of a single conductor (cross sections equal).

Hard hats could eliminate 7% of the injuries sustained by linemen.

Sacrificial anode to mitigate cable sheath corrosion at a generating station consists of twelve 3 x 60 in. graphite units buried in 4 holes on 20-foot centers in an adjacent lot.

Instantaneous short-circuit relays cannot be set low enough to provide stalled rotor protection of power plant auxiliary motors because they would then trip during motor starting.

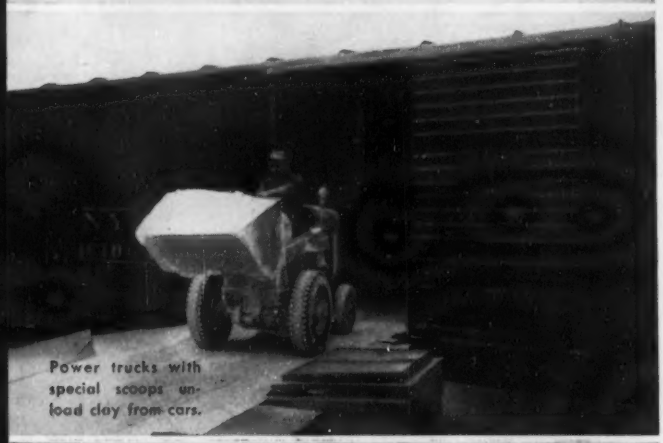
Chemical brush control requires larger maintenance budgets during the changeover from brush-cutting because the normal cutting cycle should be reduced in order to apply the chemical at the optimum growth stage.

Limiters disconnect a cable on a solid secondary network when fault current has been flowing long enough to raise the cable temperature to the danger point for the insulation.

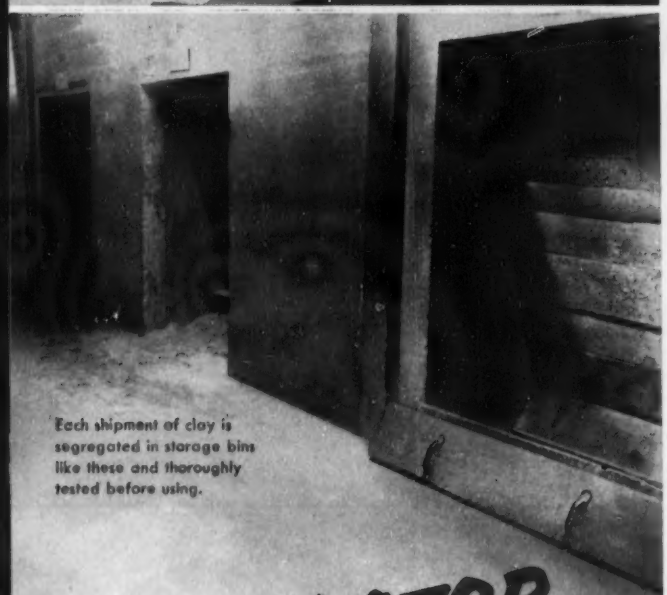
Efficiency means nothing when a unit is unavailable for service. One percent of unavailability may offset 1% of superior performance when running.

Adequate voltage for motor acceleration is rapidly becoming a problem for auxiliary system designers with both steam pressure and boiler rating pushing up the size of boiler feed pumps.

The world's finest ceramic raw materials come from the states shown in color. Victor uses them exclusively.



Power trucks with special scoops unload clay from cars.



Each shipment of clay is segregated in storage bins like these and thoroughly tested before using.

Specify **VICTOR**
PURIFIED PORCELAIN
INSULATORS

Another Reason Why—

VICTOR Makes Better Insulators

WE USE AMERICAN CLAY, FLINT AND FELDSPAR EXCLUSIVELY!

BETTER INSULATORS begin with better materials. Victor was the *first* to recognize the superior qualities of *American* clays and the advantages of closer control over sources of supply. That's why Victor *Purified* Porcelain insulators have greatest uniformity in mechanical and electrical strength values. For the whole story, send for our free Booklet, "The Story of Victor and Purified Porcelain."

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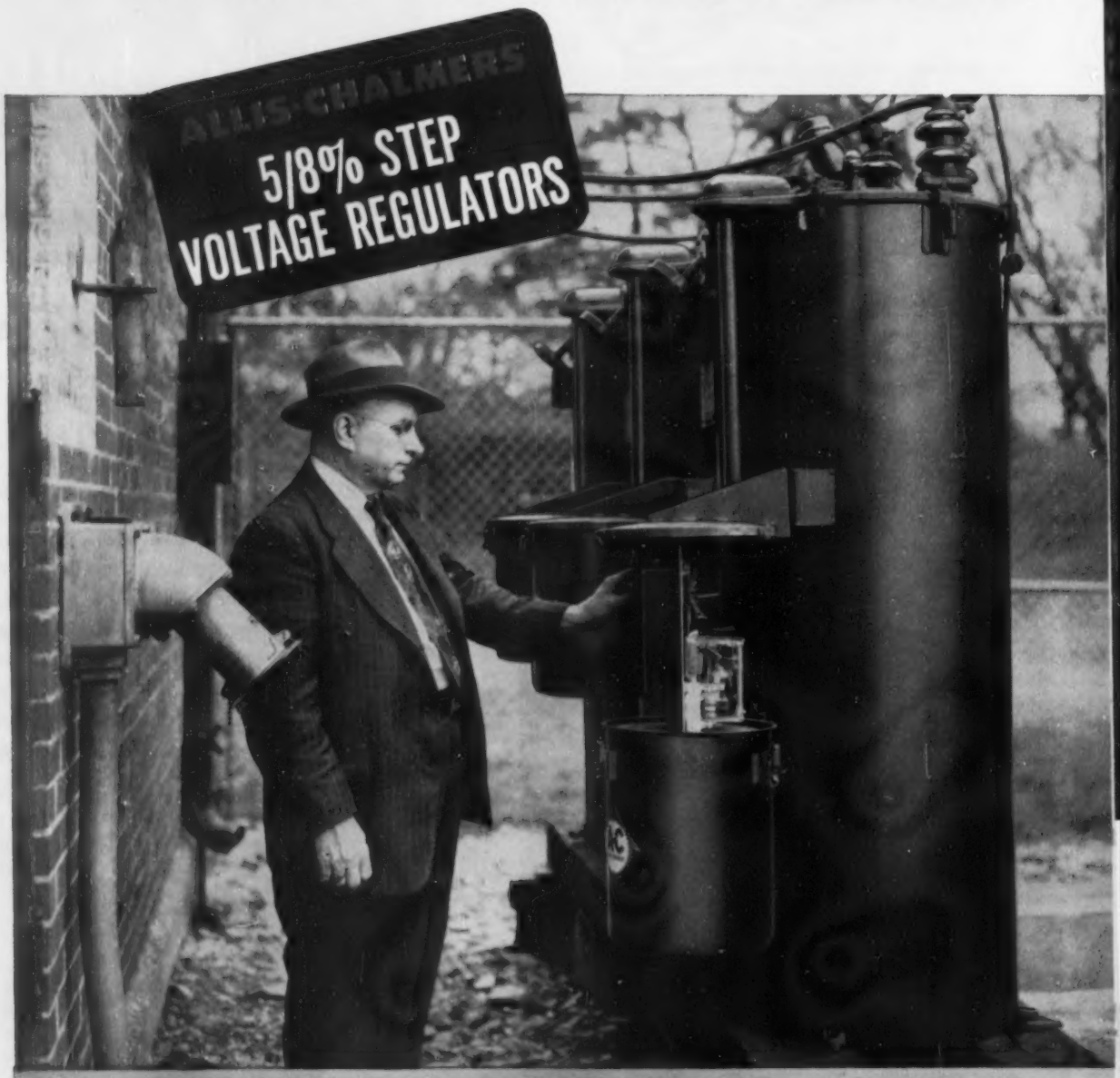
LOW VOLTAGE
PINTYPE

VICTOR INSULATORS, INC., VICTOR, N. Y.

Low and High Voltage Pintypes • Suspensions
Guy Strains • Spools • Switch and Bus Insulators
Custom Designed Porcelain

How to Increase



Field Proved Mechanism

You get a time-tested mechanism in Allis-Chalmers distribution regulators. For twenty years in thousands of applications this mechanism design has proved itself as the most efficient means of changing taps under load. Laboratory tests show it can withstand over 5 million operations — equivalent to more than a century of operation.

Long-Life Contacts

An important reason why you get satisfactory regulation with a minimum of trouble from A-C distribution regulators is their long-life contacts. Made of arc-resisting materials, contacts are of large size. Laboratory tests prove that they can stand up under the equivalent of forty years of normal operation.

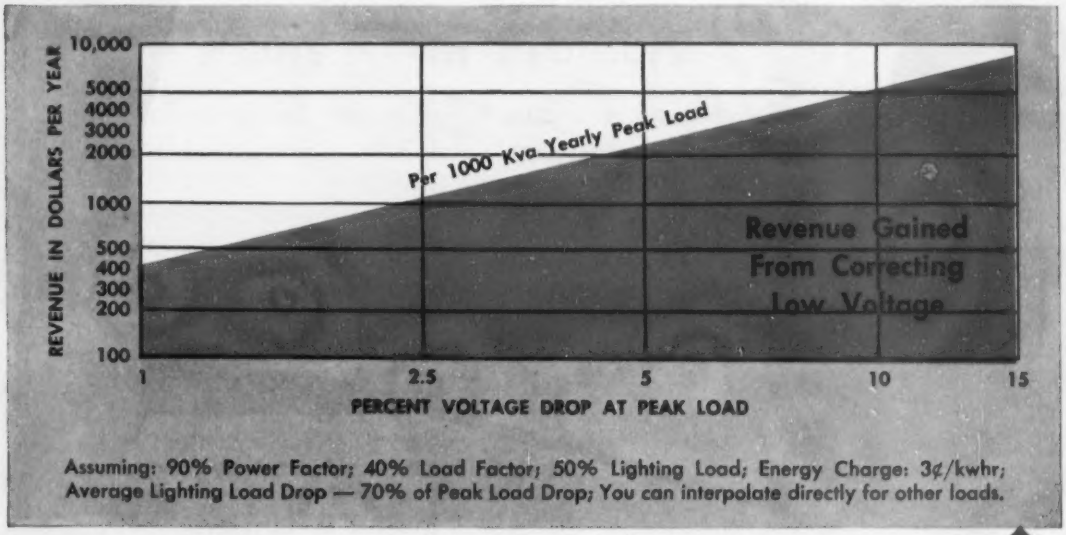
System Revenue

YOU CAN INCREASE PROFITS on nearly every feeder by improving voltage with Allis-Chalmers distribution regulators. The chart shows how accurate voltage within a narrow ± 1 volt band pays off. And the cost is low. Users report that in most cases regulators will pay back their cost within two years.

Best of all, adding Allis-Chalmers distribution regulators to your system is as easy as it is low-cost. You can hang them on a pole right near the load — or put them on a platform between poles. Some users mount them on simple foundations right next to the substation transformer.

It will pay you to get all the facts about Allis-Chalmers distribution regulators from your nearby A-C district office. Or, write Allis-Chalmers, Milwaukee 1, Wis.

A-4182



Assuming: 90% Power Factor; 40% Load Factor; 50% Lighting Load; Energy Charge: 3¢/kwhr; Average Lighting Load Drop — 70% of Peak Load Drop; You can interpolate directly for other loads.

ALLIS-CHALMERS A-C ALLIS-CHALMERS

Unit Construction

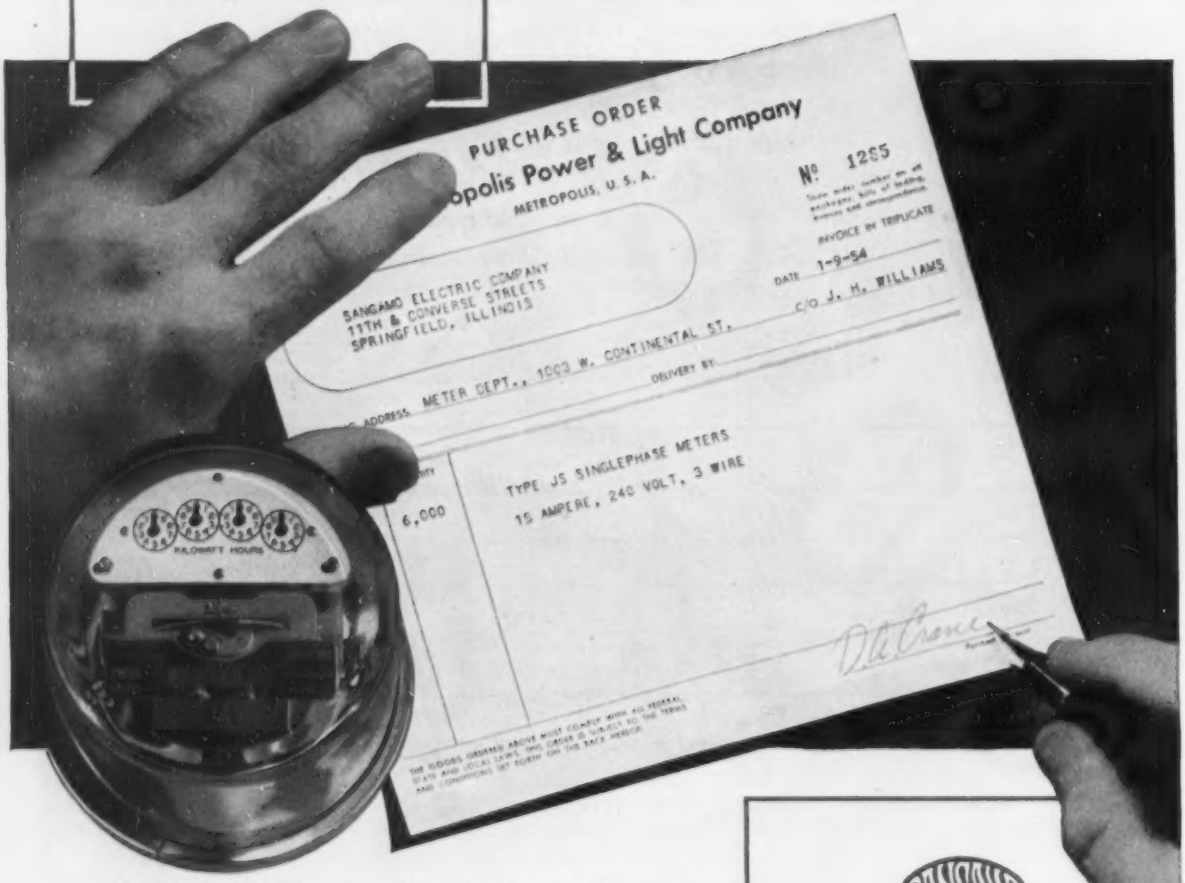
You get assurance of years of satisfactory service from A-C distribution regulators, thanks to unit construction. All connections are made and thoroughly inspected before tanking—assuring top-quality workmanship. Same feature makes untanking and inspection easy because core, coils, cover, and control form a single unit.

Simplified Maintenance

You don't need highly trained servicemen to handle Allis-Chalmers distribution regulators. Take the control, for example. It is simple. Knobs are calibrated and easy to adjust. If needed, you can remove and replace the entire control merely by pulling a single jack plug — there are no other connections to break.

a full measure of confidence

Sangamo J Meters



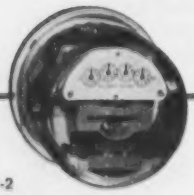
You can install Sangamo Type J Watthour Meters with complete confidence that your customers will neither be overcharged or undercharged. In the thirteen year performance record of J Meters, test records from utilities prove a remarkable degree of unchanged accuracy.

You can use J Meters in highly corrosive atmospheres for years with full confidence that both external and internal meter parts will resist the effects of corrosion. Sangamo's development of special anti-corrosion treatment and selection of materials prevents meter deterioration on outdoor installations, even under the most severe conditions.

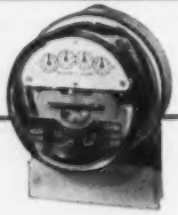
You can buy Sangamo meters with absolute confidence that your choice will be approved by those who *know* meters—the men of your meter department.

SANGAMO

SANGAMO
ELECTRIC COMPANY
SPRINGFIELD, ILLINOIS



Only Measured Facts are Known Facts



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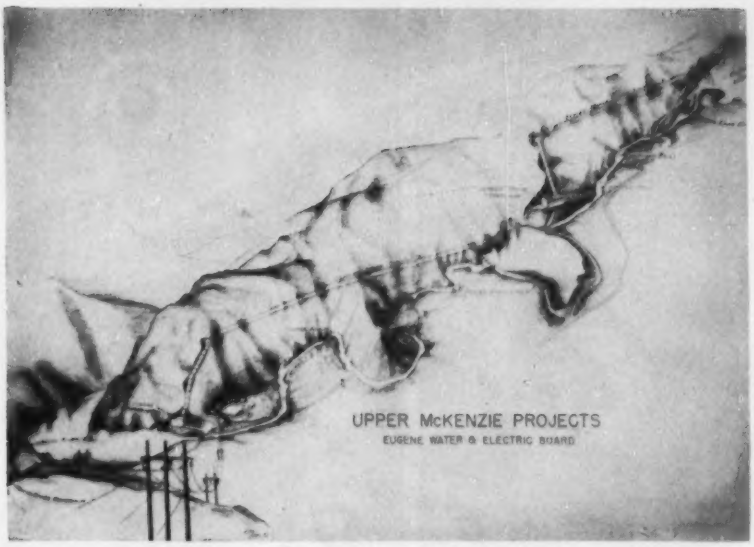


PROPOSED PROJECTS for upper fork of McKenzie River under consideration by Eugene, Ore., Water & Electric Board include three dams—Clear Lake, Beaver Marsh, and Smith River—and three powerhouses. Beaver Marsh plant would contain two 15,000-kw generating units, Carmen plant a single 30,000-kw unit and the Smith River plant one unit with a capacity of 5,000 kw

Eugene Plans River Projects

Municipal water and electric board submits proposal for development of hydropower on McKenzie's upper, south forks

Plans for hydroelectric development of the upper and south forks of Oregon's McKenzie River have been submitted by the Eugene Water & Electric Board to its board of directors. Contingent on approvals from the board and the federal government, the utility plans to build three projects, which would add close to 100,000 kw to the system by 1975.

Peak production of present facilities —two hydroelectric powerhouses and one steam plant—is 54,000 kw, the average peaking demand of the city system. Surveys indicate the need will be 150,000 kw by 1975 and officials are frank to admit they seek to eliminate dependence upon Bonneville Power Administration for future needs. They feel that Bonneville rates are due to increase, and the amount it pays BPA would finance a large share of the new installations.

Program Outlined . . . The $18-million program includes the Beaver Marsh and Smith-Carmen projects with combined capacity of 65,000 kw on the upper McKenzie between Fish Lake and the Smith River, and the Cougar Dam project on the south fork, planned by the Corps of Engineers as a flood control project only. Operating within the "partnership" principle, the utility proposes to add power facilities providing 28,000 kw to the government's plans for Cougar.

Power could come on the line from Beaver Marsh by the fall of 1957. Cougar would be on the line by 1962. The Carmen-Smith project would be built in 1969 or later.

Congress authorized Cougar Dam in 1948 as part of the Willamette basin flood control development, but made no appropriations for construction. Its overall cost is estimated at $33 million, of which the Board's share would be $11 million.

Index Is Available

Electrical World's semi-annual index for July-December 1953 has been prepared and copies are now available upon request. They may be obtained without charge. Address requests to Electrical World, Editorial Office, 330 W. 42nd St., New York 36, N. Y.

Citizens Okay Expansion of Sebewaing Power Plant

Residents of Sebewaing, Mich., have authorized the village to issue revenue bonds to finance purchase of a new 1,136-kw diesel engine generator and complete payment on another unit previously purchased on a conditional sales contract.

In an election last month citizens of Sebewaing approved issuance of $177,000 in mortgage revenue bonds by a vote of 668 to 186.

The vote appears to end a year-long dispute over power supply for the village. The dispute began in the fall of 1952 (EW, Feb. 2, 1953, p 18) when the village contracted for a new generator to replace failing generating equipment. At that point, Sebewaing Industries, Inc, a local industrial firm, secured a temporary injunction restraining the village from installing the new unit. The company and a group of citizens objected to the purchase on the grounds that electric power could be obtained from Detroit Edison Co at less expense and more dependably.

Later, the injunction was dissolved in circuit court. The state supreme court reversed the circuit court ruling and held, in effect, that no purchase of equipment could be consummated unless approved by a vote of the citizens.

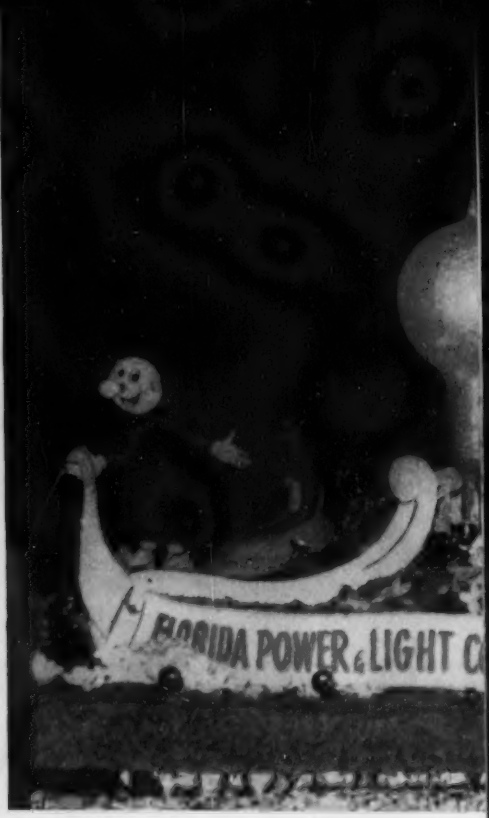
Philadelphia Utility Opens New Design Substations

Philadelphia Electric Co recently placed in service three new substations using aluminum tubing as the conductor for the bus. The design of these substations features welded connections for all aluminum joints, except those at equipment terminals.

The company estimated that a saving of approximately 35% will be realized in material and labor costs by using welded aluminum in the construction of a 132-kv substation which will be erected during the current year.

The substations using the new design are the 66-kv substation at Cromby, the Byberry substation with two 66-kv lines and a 40,000 kva, 66 to 33-kv transformer bank, and North Philadelphia substation consisting of two 66-kv lines, two 40,000 kva, and 66 to 13.2-kv transformers.

Lighting of floating fountain in Biscayne Bay . . .



Florida P&L's float in Orange Bo

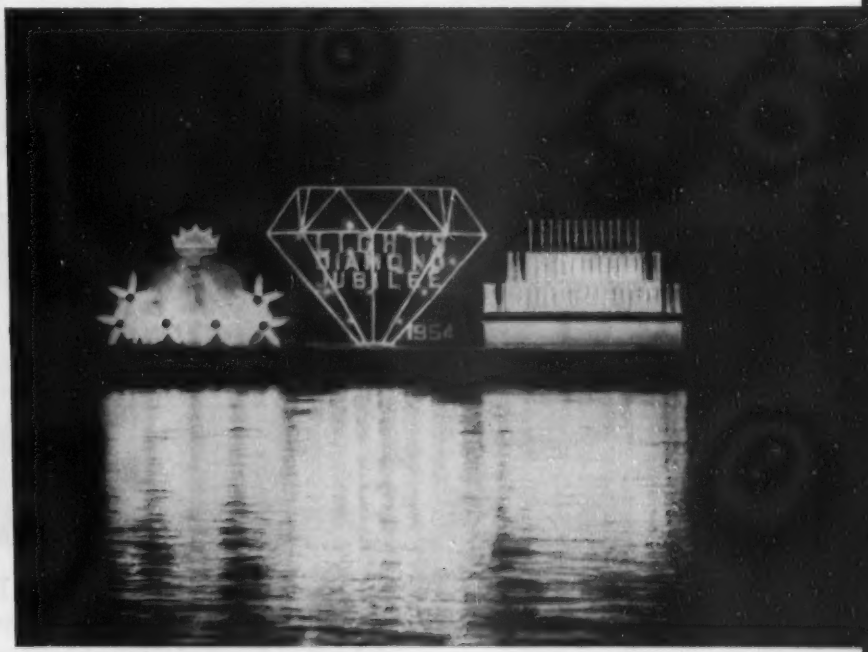
King Orange

. . . attracted 35,000 spectator

arade was link between New Year's festivities and incandescent light's 75th year

Kicks Off Light's Jubilee

Story continues Page 19



o Miami's Orange Bowl-Diamond Jubilee Celebration

Pole Star .. BEST BY FAR

3 more reasons why . . .

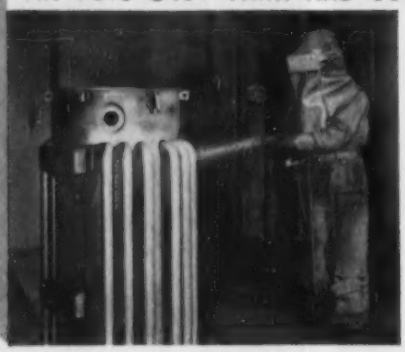
1 — The Pole Star CORE AND COIL UNIT CAN BE TAKEN APART AND REBUILT

If a coil is damaged by lightning or excessive overloading, cores can be taken apart and rebuilt with replacement coils. This can be accomplished without appreciably affecting the low core loss or low exciting current of the Pole Star.

2 — The Pole Star SIDEWALL BUSHINGS ARE ELECTRICALLY CO-ORDINATED

The Basic Impulse Level of each bushing is co-ordinated with the transformer windings. When the transformer is subjected to a voltage surge above the BIL of the bushing, the bushing will flashover on the outside. A separate, completely co-ordinated bushing is available for each voltage class — 5 Kv and 8.6 Kv.

3 — The Pole Star TANK AND COVER ARE SHOT BLASTED *THEN* PAINTED



Three coats of transformer paint are individually applied and individually baked onto the tank *only after* the tank is cleaned with steel grit to positively remove scale, grease and dirt from the tank surface.

Pole Star Transformers are available in a complete range of distribution sizes — 3 to 500 Kva, 2400 through 67,000 volts. For detailed information, write to Pennsylvania Transformer Company, Box 330, Canonsburg, Pa.

PENNSYLVANIA TRANSFORMER COMPANY
A McGRAW ELECTRIC COMPANY DIVISION
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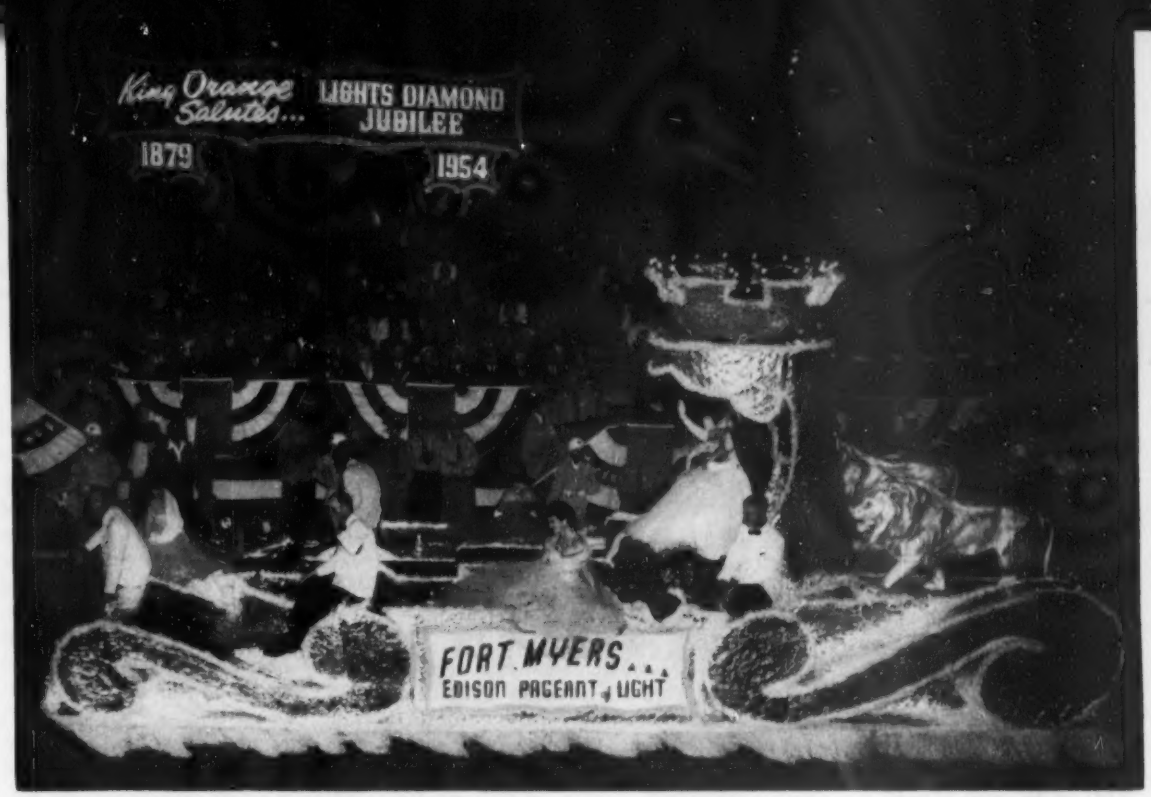


DISPLAY that will be featured in Fort Myers' Jubilee fete in February was previewed in Orange Bowl Parade. Above, it passes reviewing stand

This year it was a jamboree of oranges and light

King Orange helped the electrical industry usher in Light's Diamond Jubilee year with a gay and festive series of events culminating in the Orange Bowl Game Jan. 1.

Opening fireworks in the traditional year-end orange celebration were set off Dec. 28 to herald the lighting of a 90-foot floating fountain and lighting display in Biscayne Bay. Co-sponsored by the Orange Bowl committee and General Electric Co, the bulb-bedecked barge had a 40-foot bowl of oranges at one end and a 40-foot birthday cake with 75 "candles" at the other. As 35,000 spectators watched the 2,072 lamps flash on, a 75-horsepower motor threw up a 150-foot curtain of water around the barge. Florida P&L supplied the current, via 450 feet of submarine cable and 9,000 feet of wire.

On the electrical industry's side, the event marked the opening of a full year of festivities commemorating the 75th anniversary of the invention of the first successful incandescent lamp by Thomas A. Edison at Menlo Park, N. J. High point of the celebration will come Oct. 21, actual anniversary date, when the industry is expected to sponsor a 2-hour, 3-network nationwide television show in Light's honor.

Major event of the Miami activities, aside from the Orange Bowl Game itself, (Oklahoma upset undefeated Maryland 7-0) was the annual parade through the city New Year's Eve. Half a million persons lined the route. In the reviewing stand, over which hung a sign reading, "King Orange Salutes Light's Diamond Jubilee," were Vice Pres Richard M. Nixon, governors of three states, and other dignitaries.

The Jubilee's inaugural was not confined to Miami spectators. Across the country millions more watched the parade of oranges and light on their television sets as the New Year came in.

MARINE DRILL TEAM performed for dignitaries, among them Vice President Nixon and three state governors, on hand to receive King Orange's salute to the electrical industry

Stack Emission Given Attention

EEI Prime Movers Committee discusses research on subject. Companies report economical ways of disposing of flyash

Stack emission, focus of public attention during recent incidents of atmospheric contamination in New York and other large cities, was a key topic at the recent meeting of the Edison Electric Institute Prime Movers Committee in New York.

Meteorological conditions that worsened the "smaze" last November in New York were described by G. V. Williamson, chairman of the air pollution subcommittee. Discussion revealed that several companies have research projects underway, such as wind tunnel tests of stack designs, to further reduce air contamination.

What to Do with Flyash? . . . With dust collectors removing great quantities of flyash from stack gases, disposing of it has become a big problem. Several companies reported economical methods of disposal. Because of increased revenue from flyash, one company reported that installation of a bagging plant was justified.

A review of flyash consumers brought out that flyash is now being used on turnpike shoulders and as an admixture for a high-temperature pavement for jet plane runways. One company used it in a concrete structure at a considerable saving. Others have shipped the material a thousand miles for use in concrete dams.

Boiler Corrosion Research Authorized . . . Upon the report and recommendation of a subcommittee headed by R. W. Parkinson, Commonwealth Associates, the committee endorsed ASME plans to extend existing tables on the thermal properties of steam. Also approved was the report of a subcommittee on feedwater research headed by F. W. Argue and J. A. Powell, Stone & Webster, and V. F. Escourt, Pacific Gas & Electric Co.

The Prime Movers Committee recommended that the EEI Research Projects Committee authorize research into the cause of iron oxide formation in high pressure, high-temperature boilers, with a view of control.

Graphitization continues to be a problem in power plant operation. The metallurgy and piping subcommittee, headed by E. H. Krieg, Stone & Webster, sponsored a discussion in which H. Knecht, Consolidated Edison Co of New York, described a recent graphitization failure in large steam piping. Also reported was a similar case involving cast steel valves in the main steam line of another plant.

The committee established the Prime Movers Committee Award. It is designed to recognize outstanding contributions to the literature of thermal electric station practice or equipment by either individual or multiple authors.

For presentation under the ASME Honors and Awards Procedure the award will be administered by a subcommittee to which the following persons have been appointed: J. N. Landis, Consolidated Edison; G. V. Williamson, Union Electric Co of Missouri; R. M. Van Duzer, Detroit Edison Co; V. F. Estcourt, Pacific Gas & Electric; and V. L. Stone.

Flyash Standards Drafted

A draft of a proposed specification for flyash as an admixture in concrete has been reviewed by a subcommittee of the American Society for Testing Materials. Final draft is now being circulated to the subcommittee of Committee C-9 on Concrete and Concrete Aggregates for letter ballot. Because of changes in the final draft of the specification, the Test Method for Flyash as an Admixture for Portland Cement Concrete (C 311-53 T) will have to be rewritten. The proposed specification and the revised tentative will be presented to the parent committee C-9 simultaneously for recommendations as to adoption as ASTM "tentatives."

Herbicides as Weed Killers Discussed

Effectiveness of certain sprays is being convincingly established on an experimental and experience basis although how herbicides kill plant growth is scarcely known. Both points were conveyed by speaker after speaker at the Northeastern Weed Conference, Jan. 5-7, at New York. Electric utilities were well represented among the 480 conferees.

Spray Aspen June to August . . . D. P. Worley and two Penn State associates have found the June-to-August growing season to be the most effective time to reduce by spraying root suckering of aspen. Winter basal spraying must be repeated annually for three years to be effective. They found that 2,4,5-T in 16 to 40 lb per 100 gal was most effective.

Exclusive use of water as a vehicle for this herbicide was not found satisfactory by W. A. Meyers, American Chemical Paint Co. High proportions of oil in oil-water mixes along with high concentration of 2,4,5-T gave the best kills of oak and red maple. However, a lower ratio of oil and the herbicide were most effective with sassafras, locust, and similar species.

Six Sprays Kill 80% of Foliage . . . Progress was reported by W. C. Bramble and W. R. Byrnes, Penn State, on a Pennsylvania Electric Co right-of-way project, sponsored jointly by Asplundh Tree Expert Co, du Pont, and American Chemical Paint. Objective is to compare effects of various techniques and materials on game food and cover. Each of the six sprays tried killed 80 to 100% of the foliage, but stem kill varied. Best stem kill was obtained from a general summer basal spray of D plus T in oil.

The only shrub species capable of mass invasion of grassland is sweet fern, said Frank E. Egler, American Museum of Natural History. Many hardwoods commonly rated as invaders of grassland are found not to arise from seedlings but from old root systems. "Unjustified recommendations to produce grassland may result in relatively permanent destruction of a valuable asset for the land owner," he asserted.

Blast the Arc WITH DELTA-STAR'S NEW "JT-1"

Gas Blast Interrupting Device

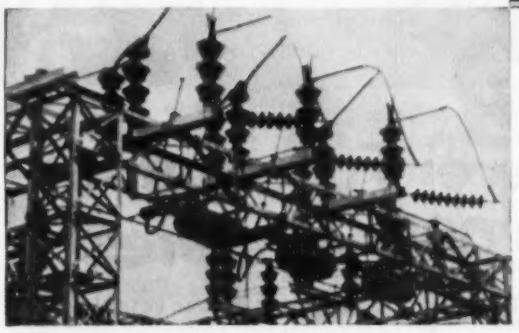
Delta-Star's new "JT-1" interrupting device for use with standard air switches is now ready for installation on your transmission systems. Extensive laboratory and field tests including many actual installations have proved the "JT-1" to be the ideal device for use on transmission lines from 69 to 161 kv where circumstances do not require the interrupting capacity or justify the use of a circuit breaker. With the "JT-1" installed on your air switches light loads can be interrupted without danger of long arcs causing phase-to-phase faults.

The "JT-1" is a gas blast device utilizing compressed nitrogen or air to "blow out" the arc at the contacts of a switch immediately after the arc has formed. The gas blast is controlled by a cam operated valve mechanism under each switch unit which is in turn operated directly by the switch operating mechanism. These valves open automatically when the switch blade reaches a predetermined position.

Since arc extinction does not depend on gas expulsion by disintegration of an arc chamber an unlimited number of operations are possible without replacement of parts.

The next time you have a problem where switches must be operated under load or long lines dropped, investigate the possibility of using Delta-Star "JT-1" interrupters. For full particulars write the factory or nearest district representative.

▲ "JT-1" Interrupter mounted on 115 kv "MK-40" disconnect.



◀ Installation of "JT-1" Interrupters on 115 kv "MK-40" 3-pole group operated switches. Photo shows blade position immediately after arc was extinguished.

WHEN YOU WANT THE BEST IN HIGH VOLTAGE SWITCHING EQUIPMENT SPECIFY DELTA-STAR

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OF PITTSBURGH
2437 FULTON STREET, CHICAGO 12, ILLINOIS
DISTRICT OFFICES IN PRINCIPAL CITIES

Completely hook-stick operated. Fuse cartridge can be removed or replaced with standard head switch stick.

L-M's Type HXO Power Fuse Cutout Interrupts up to 20,000 Amperes

Double-Venting: replaceable fuse link button closes top of tube; on low-amperage faults, the tube vents at bottom only; on high faults, pressure releases button at top, giving double-venting. This insures successful interruptions on both low and high fault currents.

Rated at 200 amperes, with interrupting capacities as follows:

20,000 amps at 7.5 kv
15,000 amps at 15 kv
9,000 amps at 23 kv
5,000 amps at 34.5 kv
4,000 amps at 46 kv

These interrupting capacities apply for full range of fuse link sizes from 1 ampere through 200 amperes.

Replaceable Power Fuse Link

Field-replaceable E-rated power fuse links, similar in design and construction to those used in distribution cutouts. No cartridges to replace, no filler tubes to buy. Designed for positive corona-free operation at high currents and voltages. Ratings and performance meet NEMA Power Fuse Standards.

L-M Power Fuse Links cost only $2.60 each (smaller sizes $1.60) compared to other cutouts requiring complete cartridges at $10 or more. Sizes from 1 to 200 amperes.

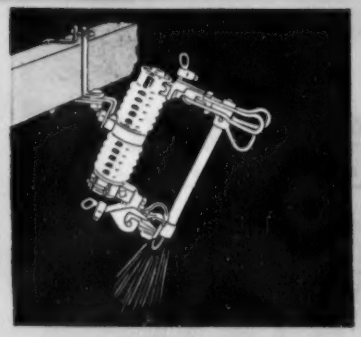
Get Full Information on the HXO

Ask the L-M Field Engineer for details and bulletin, or write Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

LINE MATERIAL

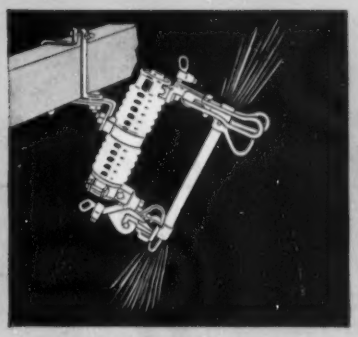
fuse cutouts

117



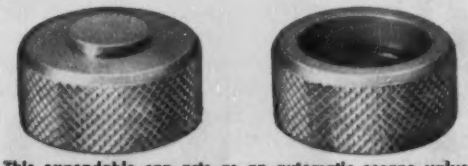
On Low Amperage Faults

single venting, at bottom only, provides ample pressure to expel the arc and the fuse link, before the tube drops down. In this case, only the fuse link needs to be replaced, not the cap.

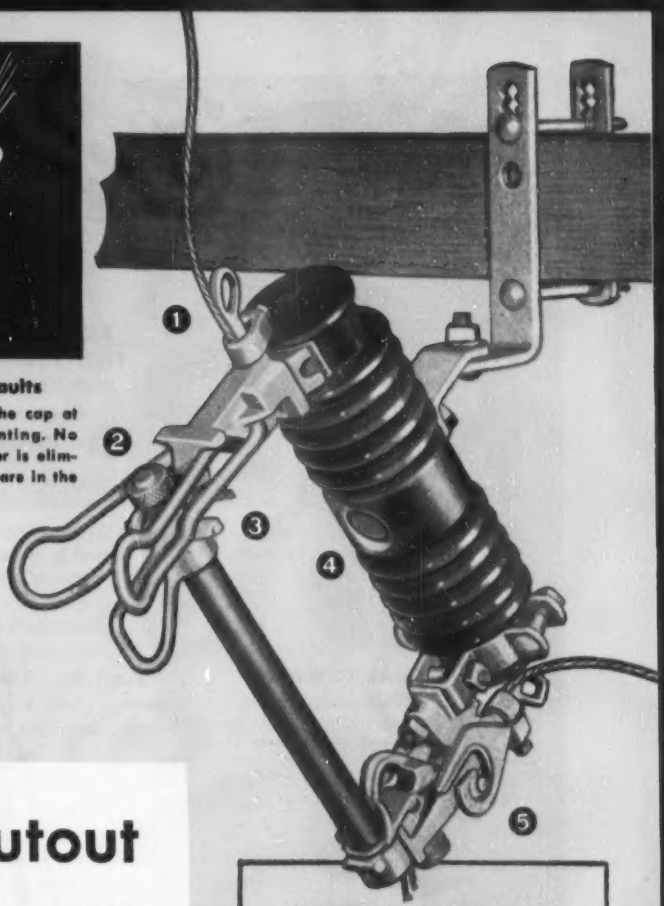


On High Amperage Faults

pressure automatically opens the cap at the top to provide double venting. No bursting of tubes. Gas flashover is eliminated because no cutout parts are in the path of gas discharge.



This expendable cap acts as an automatic escape valve. On low faults it remains undisturbed. On heavy faults the top opens, as shown at right, relieving the pressure.



L-M's "HCO" Fuse Cutout Provides 8000 Amperes Interrupting Capacity

For the first time, high interrupting capacity is available at low cost, in L-M's new open type distribution cutout. The increased interrupting capacity of the "HCO" is available at only about $3 more than the price of standard duty open type cutouts. This makes the "HCO" the lowest priced cutout of its type.

The "HCO" is ingeniously designed to handle both low amperage and high amperage faults equally well, with standard distribution fuse links.

This is accomplished by the automatic pressure-controlled expendable cap at the top of the tube. On low amperage faults, the cap remains intact, confining the pressure and providing bottom venting only. On high amperage faults, the diaphragm in the cap opens, relieving the pressure by providing double venting.

The "HCO" is completely bird-proof. The tube can be removed and replaced with the standard head hook-stick. It takes standard distribution fuse links.

Get details from the L-M Field Engineer; or write for Bulletin. Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

Rated at 5, 7.5, and 15 KV, 100 amperes.

NOTICE THESE FEATURES

1. Rated at 5, 7.5, and 15 kv, 100 amperes, with 8000 amperes interrupting capacity using any size standard universal fuse links.
2. Expendable cap acts as automatic pressure-controlled vent to provide double venting on high amperage faults.
3. All current-carrying parts are silver plated.
4. Completely bird-proof design.
5. Heavy, closely fitted L-M—patented double hinge takes all the recoil forces. Top contacts not stressed by recoil. In reclosing, the hinge guides the tube directly between the contacts—it can't miss the top contacts.

The expendable caps, replaced only when the link blows on a high amperage fault, are economical, easily replaced. They are supplied in a cloth bag, carried with the fuse links.

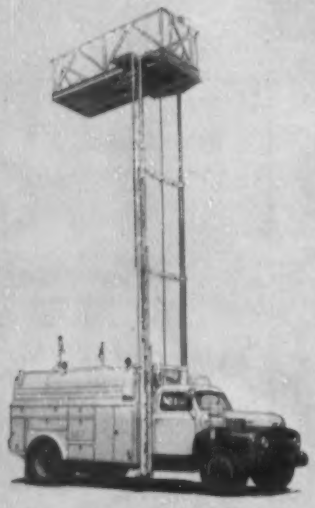
LINE MATERIAL

fuse cutouts and fuse links

POWERS American AERIAL EQUIPMENT

AERIAL TOWERS

Series 7A-01 . . . in sizes for safe, smooth elevation to 21′ or 25′. Equipped with telescopic ladder. Operation from cab or tower. Platform revolves 360°.



HYDRAULIC AERIAL TOWERS

Series TW-2 . . . enables workmen to reach areas more than 35′ above ground. Can be operated from tower or truck cab. Platform revolves full 360°. Telescopic ladder is standard equipment.

REVOLVING Fully-Powered HYDRAULIC AERIAL LADDERS

Series HL-35 . . . elevates, extends, lowers, and retracts by *hydraulic power*. Available in sizes having ground-to-platform height up to 35′. Revolves full 360°.

REVOLVING AERIAL LADDERS

Series 5510 . . . perfectly balanced to permit fast, easy elevation. In sizes having 23′6″, 26′6″, and 30′6″ ground-to-platform height. Can be spotted at angles from 30° to 75°, and revolved full 360°.

HINGED LADDER RACK ASSEMBLIES

Standard and special racks, with extension ladders, can be furnished for installation on Powers-American bodies. These include racks with standard 24′ ladders, and racks with braced or trussed ladders to reach heights up to 30′.

A descriptive bulletin is available on each item of aerial equipment in the Powers-American line. Bulletins, plus prices and complete details, are yours for the asking.

McCABE-POWERS AUTO BODY COMPANY

MAIN OFFICE
5900 NO. BROADWAY • ST. LOUIS 15, MO.

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Sell—Or Die!

HARLLEE BRANCH, Jr,
President, Georgia Power Co, Atlanta, Ga.

I hope our company will always be a selling organization. When the instinct and inspiration for selling disappear, particularly when they disappear from a power company, that company is liquidating itself. In my opinion it is committing suicide by degrees because there can be no really useful and effective electric utility without the push of selling.

I am not sure that we have been quite so alert in selling as we should have been these recent years. We have generally been a little short of personnel. We have almost continuously been short of material and apparatus. We have usually had available a little less electricity than we would have been comfortably satisfied with. And always, the load has seemed to grow and to grow and to compound its growth without too much active stimulation on our part.

Clamorous Demand . . . We have found ourselves the custodians of a perfect piece of magic. A piece of magic that a few years ago had already demonstrated itself and sold itself to the public. So there has been a clamor for it. And that clamor has been so insistent and sometimes so noisy that it's been almost all that we could do, all of us, to keep satisfied the demand that came and sat on our door step.

But times are changing, and I'm glad they are. Because it will separate the sheep from the goats in this business. We are entering upon a selling era, of that I am totally convinced. Next year Georgia Power Co, for example—and I think this is generally true of utility companies—will find itself the possessor of a surplus of electric power. It is not going to be very large. It's not going to be quite the reserve that we would like for perfect comfort. But we will find ourselves with something to sell and under the urgent necessity of selling.

High Cost Facilities . . . Electric service is a product of generation and transmission facilities. Much of these

HONOR GUESTS, Charles Collier, vice president, and Harllee Branch, president of Georgia Power, are welcomed by Elizabeth Parker, home service department head, to company's 1953 home service conference

were installed during a period of exceedingly high costs. The fixed charges on these facilities must be paid every month, and the only way in which they can be paid is out of electric revenues. We must find ways to increase our revenues without unduly burdening the users of our service.

We are going to have to sell as we have not sold in a long, long time. But we are not just going to sell electricity. If we do only that, we are going to be inadequately compensated; and we'll be totally unable to earn the return necessary to carry our plant investment. We are going to have to do selective selling—selling that will bring in revenue commensurate with the higher cost investment of these later years.

Everybody in our company has got to be selling. Everybody with whom we are affiliated has got to be selling. I think you good ladies from the electric membership corporations (All home economists from co-ops served by the company were present.) are going to have to be selling. I know you have been thinking how much you have got to sell because you are confronted in a greater or less degree with identically the same situation as we are—the necessity of earning returns on facilities installed at high cost.

Inspired Selling . . . It's going to call for a sales effort that is far sighted, that is inspired, and most of all that is continuous and energetic. And I don't know anybody in the Georgia Power Co, if I may get back to our own family, who's going to play any more important role in that selling effort than you women of the home service department.

Your report shows something of the revenues that you have already added because you have been doing a selling job. During the 12 months ended last October, through your wiring layouts, your laundry and kitchen plans, your repairs to appliances, your addition of lighting wattage, and your various other activities, you have added to the revenues of this company new revenues aggregating $86,168.

Those promotional activities demonstrate two things: First, that you can do the job that needs to be done. And second, that you can do it in the places where it most needs to be done.

A Tape Recorder Was Listening

When Harllee Branch, president of Georgia Power Co, made an off-the-cuff talk at the 1953 home service conference of the company (EW, Jan. 4, p 54) , he was addressing himself only to his home service representatives. However, when he emphasized their importance as a part of the company's selling organization, his words acquired an industry-wide application. For that reason they are reproduced here as they were edited from a tape recording.

German Plant Uses Double Reheat

- **Heat for first and second stages of reheat derived from initially superheated steam through heat exchangers.**
- **Boiler-reheated steam is then fed to high-pressure turbine.**
- **Wide-range operation demands 36% efficiency at half-load along with 38% at full load.**

A 125,000-kw steam station designed for frequent starting and high operating efficiency at partial loads is being built at Mannheim, Germany. These conditions are met by limiting steam temperature to 986 F, using double reheat, maintaining 540 F feedwater temperature, and holding 0.9-in. Hg vacuum at full load.

The result is 38% thermal efficiency at full load and 36% at half load.

F. MARGUERRE, Baden-Baden, Germany

Steam temperature of 1,050 F would boost full-load thermal efficiency to 39%. Frequent starting, however, made the higher temperature undesirable, and 986 F allowed the use of plain ferritic steel piping. Frequent starting condition is caused by fluctuating loads during seasonal availability of hydro power.

The steam cycling selected to achieve high efficiency through these unfavorable conditions is represented in the accompanying heat balance diagram. The unique method of effecting double reheat with heat exchangers in the turbine section also becomes apparent.

Turbine pressure is moderate at 2,000 psi, with relatively low steam temperature of 967 F. Feedwater temperature at 540 F is higher than that corresponding to exhaust pressure of 850 psi because of the residual superheat at 767 F. Meanwhile, this has through the reheater supplied 904 F steam to the turbine.

As in a single reheat plant the high pressure steam goes only once from the boiler to the turbine and back. Thus there are only three main pipes and not five as would be necessary for double reheat in the furnace. Double reheat occurs at the high pressure turbine exhaust heat exchangers. Pressure drop across these exchangers is only one-fifth of the drop in conventional furnace reheater and piping. The same cycle efficiency as conventional furnace reheat is retained with merely lower reheat temperatures.

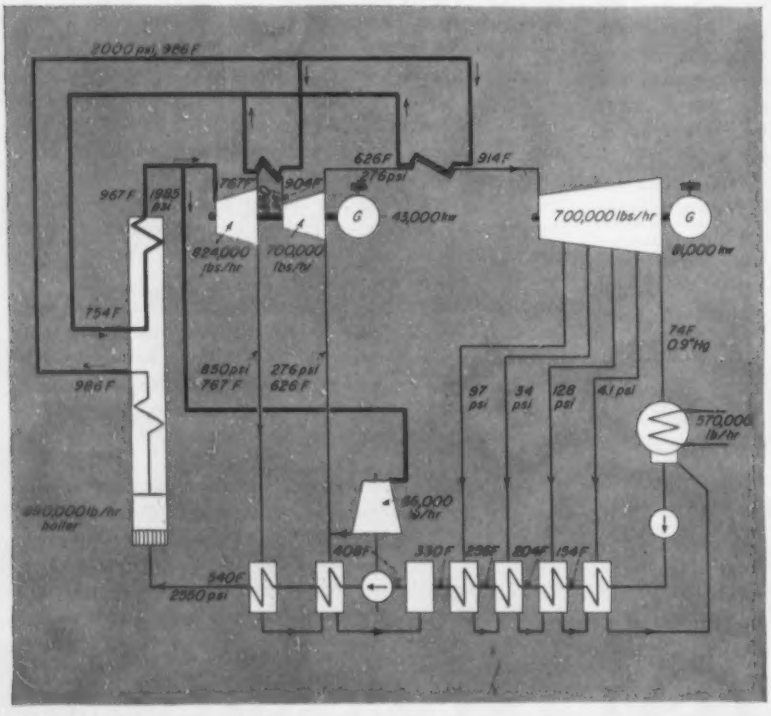
Design Has Advantages . . . With this arrangement, the condition of frequent starting is simplified. Only one superheater needs to be protected, instead of three which would be involved with conventional furnace double reheat. Also, under partial load conditions, this arrangement gives a very flat temperature-load characteristic curve. Conventional designs have substantial temperature drop at low loads.

Improved regulation and fewer safety devices are achieved by the advantage of the small amount of steam in the short pipe lines and their associated heat exchangers, one-tenth of conventional arrangements.

Additional pressure drop occuring in the primary superheater cycle requires merely increased feed pump work and a small percentage increase of boiler cost.

Special Heat Exchanger Reheaters . . . Heat exchangers used for the reheats are all-welded design. They have been proved in a single reheat arrangement for reheating 900,000 lb hr. During 2½ years of such single-reheat service, the calculated heat transfer rates and pressure drops have been checked and found accurate. Additional cost compared with direct double reheat will be about 1% of the total plant cost.

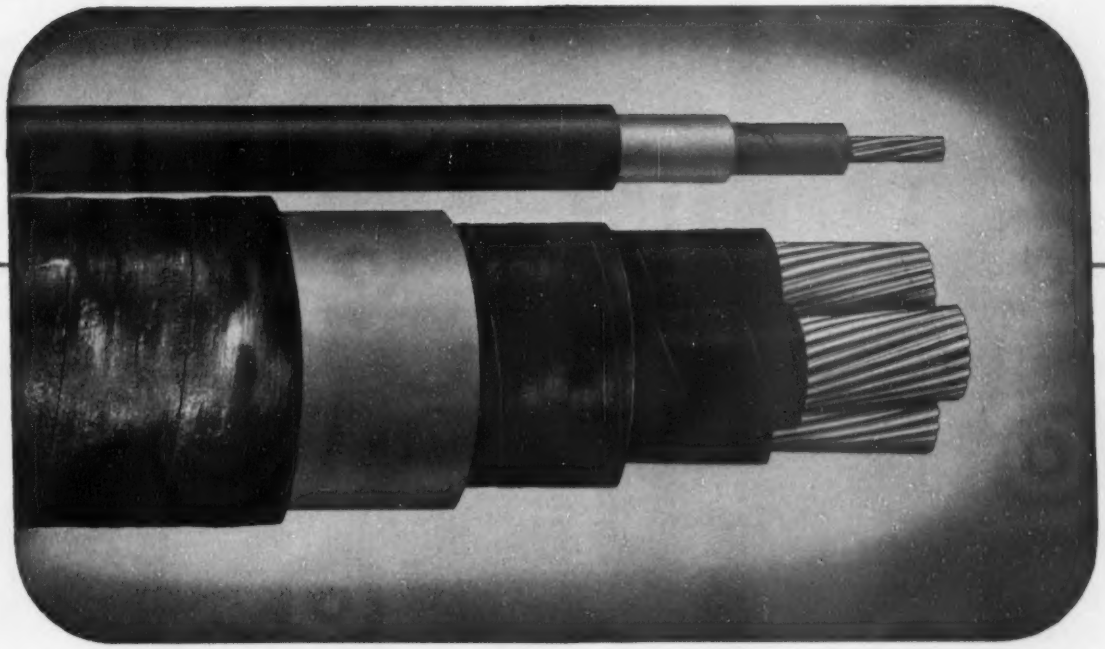
This article is based on a letter to the editor of Electrical World commenting on the article, "A New Power Generation Milestone" by Philip Sporn, describing the proposed 4,500 psi, 1,150 F, 1,050 F, 1,000 F double reheat unit for Philo Station of American Gas & Electric Co (EW, June 29, 1953, p 72).



FLOW DIAGRAM shows the location in the steam cycle of the heat exchangers for double reheat. Physical location of the heat exchangers is just below the turbines. Some process steam, not indicated on diagram, required maintaining 276 psi for second reheat stage

ROEBLING PROTECTIVE COVERINGS ON LEAD SHEATHED CABLE

for utilities, chemical plants and the petroleum industry



LEAD SHEATHED CABLES used in certain applications by public and private utilities, chemical plants and the petroleum industry are often impaired by electrolysis or chemical corrosion. But such corrosive action can be effectively reduced, and cable life extended, by using Roebling Paper Insulated and Varnished Cambric Cables with either of two outer protective coverings.

One of these coverings is an extruded thermoplastic sheath employing a special high-molecular weight polyethylene. The other is ROESHEATH, built up of neoprene and neoprene-filled fabric tapes and vulcanized directly over the lead sheath. Both coverings not only provide essential protection, but, in some cases, may permit the thickness of the lead sheath to be reduced.

For longer, more dependable cable life and worthwhile economy write for full information... and get our recommendations for solving any special problem.

John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

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CF&I

PROJECT SERVICE REPORT

Planning and co-ordination help CEPCO save time, money on new steam plant

1 One-line diagram is discussed by W. Fleming, Exec. Ass't. CEPCO; C. Holland, G-E Sales Engr.; and C. Ernst, V. P. and Gen. Mgr. CEPCO to start project.

2 Final drawings reviewed by H. Soliday, E.E., Fluor Corp.; W. Moody, G-E Applic. Engr. and O. Hedrich, Power Consultant and Proj. Mgr., Fluor Corp.

3 Detailed specifications are approved by W. Fleming, Exec. Ass't. CEPCO; R. R. Owen, G-E co-ordinator at Schenectady and G. Miller, G-E Sponsor Engr.

4 Connection details are worked out for first 30,000-kw generator by W. Marsh, G-E Project Engr. and J. M. Todd, G-E Generator Engr.

5 Schedule and shipment progress reports compiled by L. Warner and E. Clifford of G-E Order Service keep customer consistently up-to-date on all apparatus.

6 Plant in service, President of CEPCO, Albert Cage, gives his enthusiastic approval to the successful "ahead of schedule" completion of Highgrove.

On the line—This dramatic floodlighted night view outlines the 320,000 lb. per hr. boilers, the turbine generators and one of the two-pass side entry condensers. The two 30,000-kw units can be operated by a crew of only four men per shift.

Teamwork Helps Get Highgrove On The Line—Ahead of Schedule

The first completely outdoor steam plant to be built on the Pacific Coast, the Highgrove plant of California Electric Power Co., near Riverside, was completed ahead of schedule at an overall cost of approximately $140 per kw. G.E. was given unit responsibility for all the major electrical equipment of this base load station.

The success of this project was the result of careful planning on the part of the electric utility, the Fluor Corporation, Ltd., Engineers and Constructors . . . plus the teamwork of General Electric "Project Service."

What is G-E Project Service?

Under Project Service, a G-E team of sales and application engineers and expediters is assigned to co-ordinate the manufacture and delivery of all the electrical equipment—or any of the major components you call on G-E to supply—whether purchased directly, through your consulting engineer, or machinery manufacturer.

From preliminary one-line diagrams through final delivery, every major step is carefully engineered, scheduled, followed-up and its progress reported to you. The overall objective is to save you time, money, and engineering manpower and at the same time secure complete electrical and mechanical co-ordination.

Cuts engineering, installation time

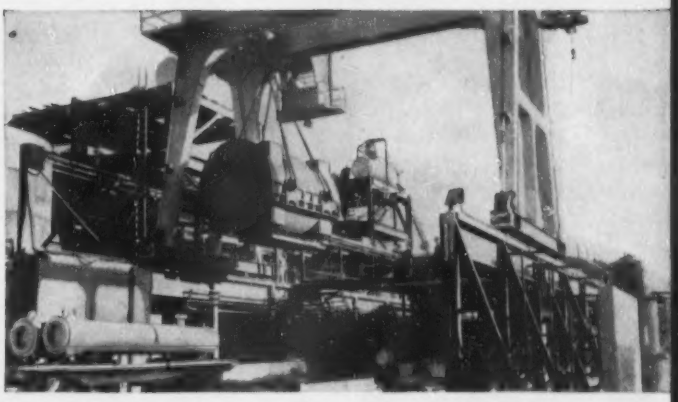
It will relieve you and your consulting engineer of many details of electrical specifications, design and manufacturing co-ordination and delivery schedules. Project Service also insures co-ordination of field engineering and installation so essential in avoiding on-site errors and getting *your* plant "on the line—on schedule."

For more details on Project Service, contact your G-E Representative, or write for GEA-6032 to Apparatus Sales Div., General Electric Company, Schenectady 5, N. Y.

302-1

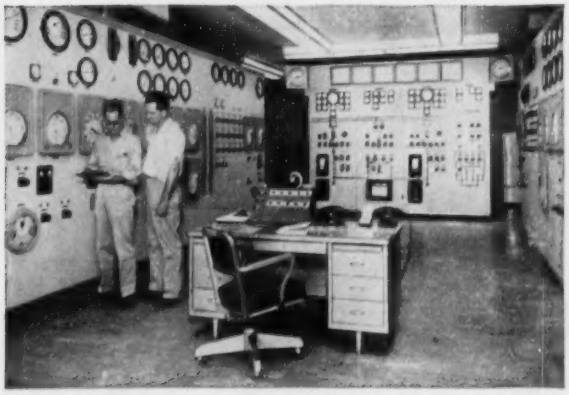
MORE POWER TO AMERICA

GENERAL ELECTRIC

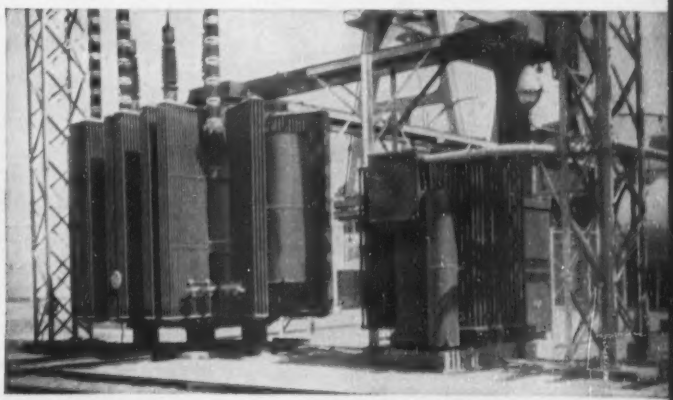


First of two 30,000-kw stators being transferred to the turbine deck from rail car. Two more 40,000-kw units will bring total plant nameplate capacity to 140,000-kw. G-E field engineers carefully check all phases of installation, assure on-the-spot supervision, unit responsibility.

G-E product specialists follow every phase of equipment selection and installation. Here turbine engineer R. B. Barton (center) inspects exciter with O. Hedrich, Fluor Corp. and Highgrove engineer A. A. Lingo.

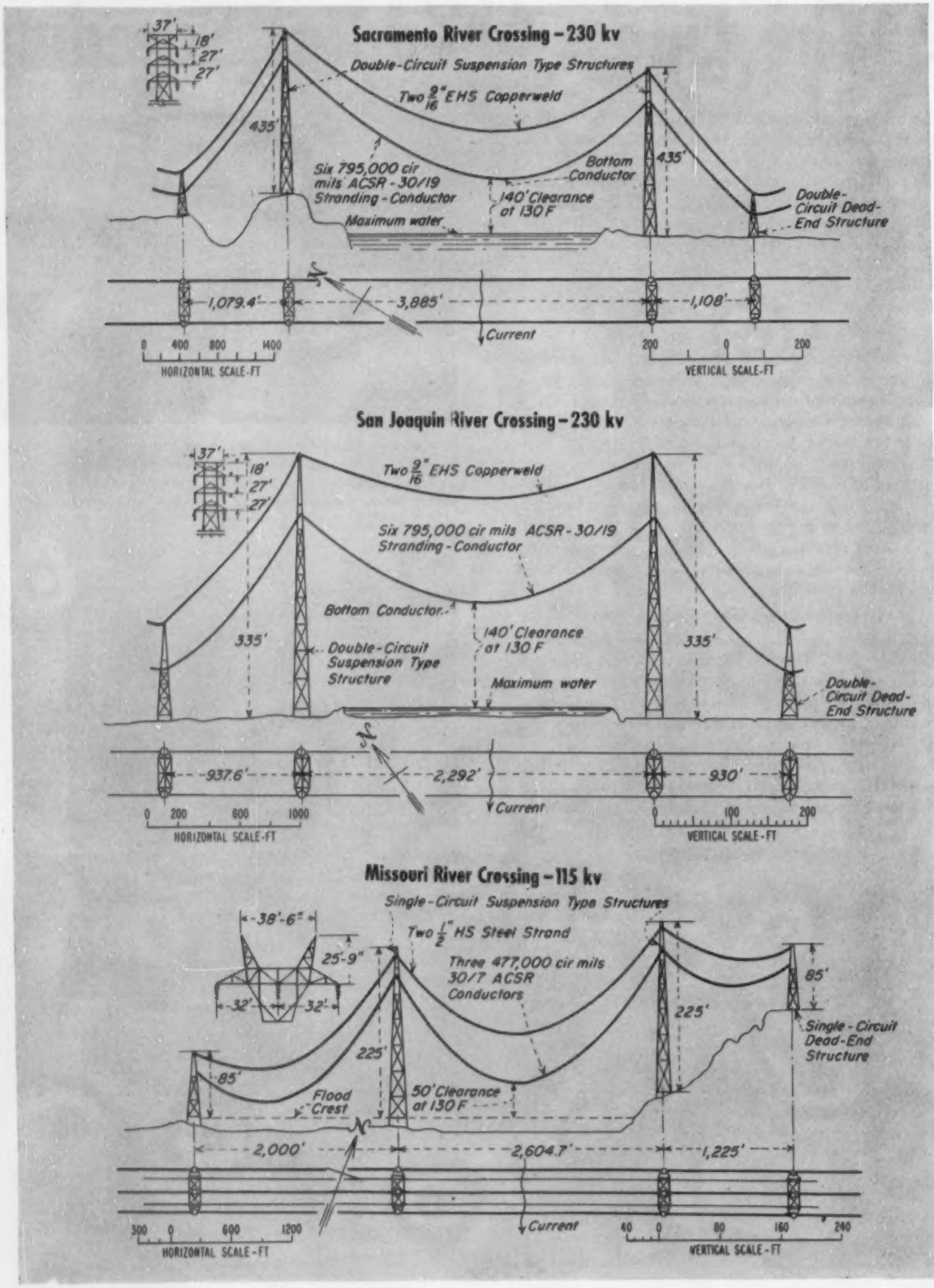


In this control room one small master control switchboard (far end of room), maintains a perfect working relationship of all equipment for the proper operation of the entire plant.



Co-ordinated engineering of project means easy installation, neat final appearance of outdoor equipment. Clean yard here has 30,000/37,500-kva power transformer and 3,000-kva station service transformer.

Bureau Transmission Crossings



Provide Long-Span Design Details

Lines spanning the Sacramento, San Joaquin, and Missouri Rivers supply much information reflecting modern-day practice. Discussion covers two 230-kv and one 115-kv crossing. These are the longest and highest spans of bureau system

T. M. AUSTIN and **R. S. DORCAS**, Transmission Design Engineers, U. S. Bureau of Reclamation, Denver, Colo.

Design details for three long-span river crossings in California and South Dakota contribute valuable background information to modern-day practices in transmission line design. Taken together, these crossings over the Sacramento, San Joaquin, and Missouri Rivers, represent the longest and highest spans on the U. S. Bureau of Reclamation system. They also provide an opportunity to compare designs for voltages of 115 kv and 230 kv and for different loading conditions.

Now serving the Central Valley Project in California are the bureau's two highest transmission lines. These new 230-kv circuits cross the Sacramento and San Joaquin Rivers near Rio Vista and about 45 miles northeast of San Francisco. They complete the 215-mile link of two parallel 230-kv lines between Shasta Plant and Tracy pumping plant.

Bureau's Highest and Longest . . . The Sacramento River crossing is not only part of the highest transmission line constructed by the bureau, but also it is the bureau's longest single span. The main crossing of 3,885 ft requires two double-circuit suspension towers that rise 437 ft above their concrete foundations.

The San Joaquin River crossing is 2,292 ft long and is supported on double-circuit suspension towers 337 ft high above foundation. Each suspension tower on both crossings is backed up by a tension-type anchor tower. Construction of the unusually high lines was necessitated by required maximum clearance of 140 ft above high water level of both the broad and navigable rivers.

Tensions Reduce Tower Height . . . Bureau engineers selected 795,000-cir mils, 30/19 ACSR conductor for both crossings. This standard conductor has the same conductivity as 795,000-cir mils, 26/7 ACSR used on other sections of Shasta-Tracy lines. Its greater strength, however, permits use of tensions which reduce required height of suspension towers. But final tension is not high enough to require the excessively heavy anchor towers that would have been required by the use of very high strength special conductors.

Because both crossings are subject to saline fog, corrosion-resistant conductors were required for the overhead ground wires. Extra-high strength Copperweld, consisting of $\frac{7}{8}$-in. strand, was found to coordinate well with phase conductors.

Crossings are located in the California light-loading area and are designed for no-ice conditions and minimum temperature of 25 F. Wind velocities in crossing area are known to increase rapidly as height above ground increases. Thus, crossings are designed for a maximum wind pressure of 15 psf.

Dampers Cut Vibration . . . Because of expected high velocities and prevalence of steady winds in the area, long armor rods with several Stockbridge vibration dampers of several sizes and spacings were installed on both the phase and overhead ground wires. Vibration recorders on the Sacramento River crossing in 1952 indicated that vibration is almost completely damped.

Fog-type suspension insulators are used. Three additional disks, making a total of 17 are used in each suspension string to increase impulse insulation values. High towers have considerably more impedance to lightning currents. Thus, increased potential at top of the tower requires more insulation to prevent flashovers at an insulator string.

Safety Factor on California Crossings . . . Factor of safety for anchor towers on both crossings is 1.5 for full dead end under California code light loading plus dead load and design wind load on 150% of net projected area of one face. Full dead-end conditions assume all backspan conductors broken and all anchor span conductors intact. Factor of safety for crossing towers is 1.5 for any two wires broken in same span under California code light loading plus dead load and 45-deg wind load on tower varying from 15 to 30 psf from bottom to top. In this particular instance, transverse wind blowing on the electrical conductors is taken as 15 psf.

All towers except two on north bank of Sacramento River are located in low, swampy areas. They are supported on treated timber piles capped with stepped concrete footings. Two towers on higher ground have reinforced concrete pad-type footings. Anchor tower legs are spliced to 8x8x$\frac{3}{4}$-in. stub angles embedded in footing concrete. Crossing towers are anchored through a heavy base detail by three 2$\frac{1}{2}$-in. diameter high-strength bolts installed at each tower leg.

Span Is One of Longest . . . Completed in late 1953 is a 115-kv line from proposed Oahe Plant, on the Missouri River near Pierre, S. D. to Rapid City, S. D. Circuit will supply power to Rapid City Air Base and other users from a 230-kv line that goes from Fort Randall Plant to Bismark, N. D. Oahe-Rapid City line crosses the Missouri at Pierre. Main crossing span is 2,604.7 ft long, supported on two single-circuit suspension-type towers having an overall height of 225 ft above concrete foundations. Each suspension tower is backed up by a tension-type of anchor tower as shown.

Missouri River crossing is designed

Vital Statistics for Three Long-Span Crossings—Bureau of Reclamation

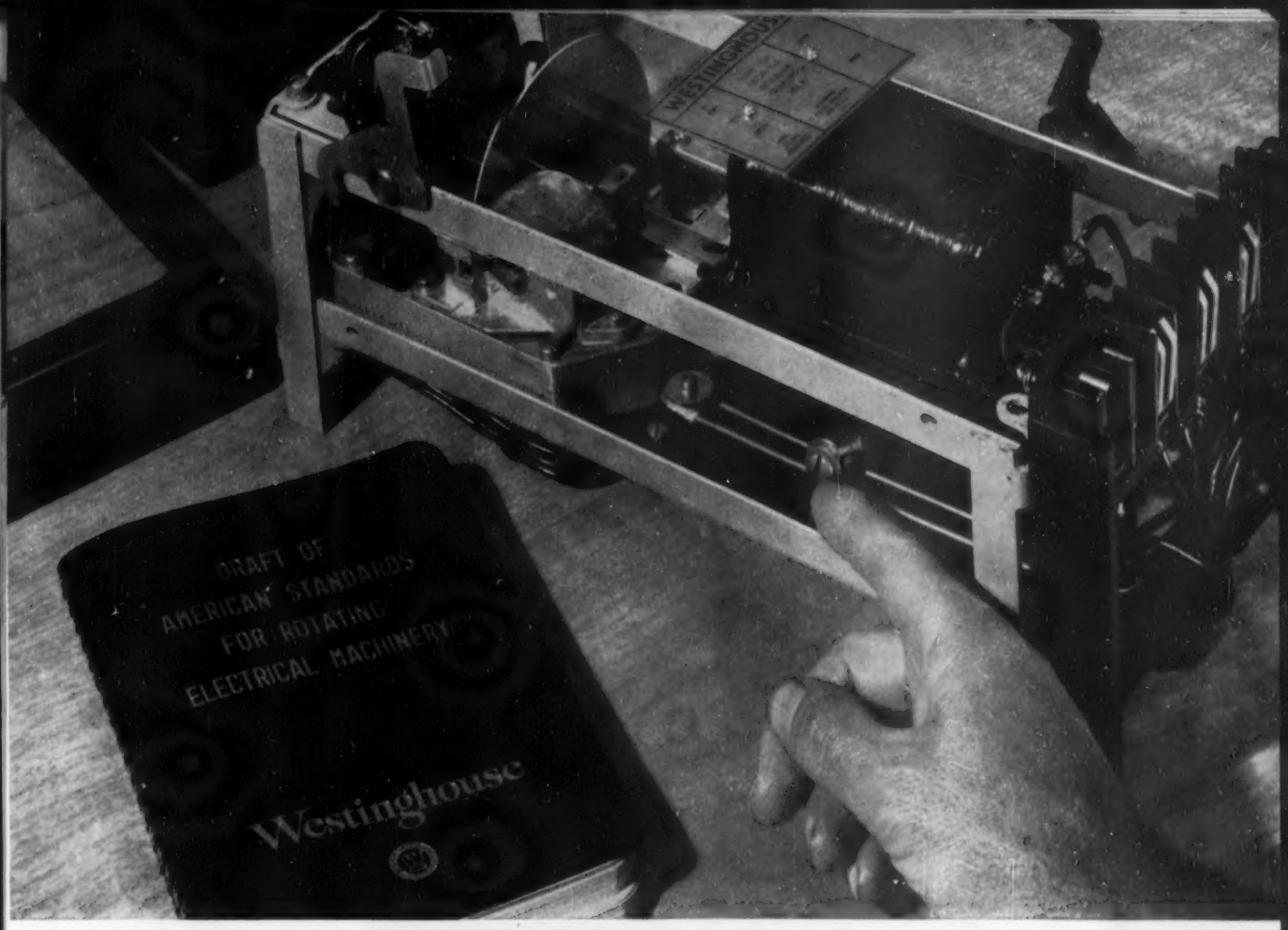
	Sacramento River	San Joaquin River	Missouri River
Line voltage (kv)	230	230	115
Span lengths (ft)			
Main crossing	3,885	2,292	2,604.7
Anchor spans	1,109.4	937.6	1,225
	1,108	930	2,000
Type of structure	Double-circuit steel tower	Double-circuit steel tower	Single-circuit steel tower
Tower height (ft)			
Suspension towers	437	337	225
Anchor towers	121	121	85
Tower weight (lb)			
Suspension towers	345,000	234,000	125,000
Anchor towers	53,100	53,100	28,500
Design loading	No ice, 15 psf wind pressure at 25 F		NESC Heavy (5th edition)
Insulation			
Dead ends	Triple strings of 18 10 by 5¼-in. 15,000-lb units		Double strings of 10 standard 10 by 5¾-in. 15,000-lb units
Suspension	Quadruple strings (two double-yoke sets) of 17 fog-type 10 by 6½-in. 15,000-lb units		Double strings of nine standard 10 by 5¾-in. 15,000-lb units
Conductors[1]	Six 795,000-cir mils, 30/19 ACSR		Three 477,000-cir mils, 30/7 ACSR
Ultimate strength (lb)	38,400	38,400	23,300
Outside diameter (in.)	1.140	1.140	0.883
Tension at no ice, no wind (lb)	9,745 (25 F)	9,600 (25 F)	4,766 (−40 F)
Maximum tension design conditions (lb)	14,500	13,600	11,500
Maximum sag (ft at 60 F)	.....	.....	147.6
Maximum sag (ft at 130 F)	260	97	155
Minimum clearance at high water (ft at 130 F)	140	140	50
Clearance (ft)	6.5[2]	6.5[2]	4.5[3]
Conductor attachments			
Dead end	Aluminum compression		Aluminum compression, turnbuckles for sag adjustment
Suspension	Two suspension clamps, 3 ft apart, 34-ft tapered aluminum armor rods		Suspension clamps with tapered aluminum armor rods
Overhead ground wires[1]	Two 9/16-in. (19 No. 9) extra-high-strength Copperweld		Two ⅜-in. seven-wire, HS galvanized steel
Ultimate strength (lb)	.....	33,610	18,800
Tension at no ice, no wind, −40 F, (lb)	.....	.....	3 631
Maximum tension design conditions (lb)	8,500	8,500	9.400
Maximum sag (ft at 60 F)	.....	.....	131.8
Maximum sag (ft at 130 F)	232	81	.....
Midspan separation[4]	57	45	50 (60 F
Overhead ground wire attachments			
Dead end	Special bronze clevis, threaded, seamless connectors		Compression dead ends, turnbuckles for sag adjustment
Suspension	Two suspension clamps, 3 ft apart, bronze pre-formed armor rods		Suspension clamps with preformed galvanized steel armor rods
Tower grounding	Three ⅝-in. 20-ft Copperweld ground rods under each footing		Two ⅝-in. 10-ft Copperweld ground rods under each footing
Vibration dampers (Stockbridge type)			
Overhead ground wires	6 lb (three)	6 lb (three)	6 lb (three)
(each end of main span)	4 lb (two)	4 lb (one)	.....
Each end of anchor	6 lb (one)	6 lb (one)	6 lb (two)
span	4 lb (one)	4 lb (one)	.....
Conductor (each end of main span)	16 lb (two)	16 lb (two)	12 lb (three)
	14 lb (one)	14 lb (one)	.....
	10 lb (one)	.....	.....
Each end of anchor spans	16 lb (one)	16 lb (one)	12 lb (two)
Airway obstruction marking (suspension towers only)			
Daytime	White and international orange paint in accordance with CAA regulations		
Night—			
Red coded beacons	Top and halfway up	Top	.....
Red obstruction lights	110 and 325 ft above ground	105 and 215 ft above ground	85 and 150 ft above ground and at top
Clear search lights beamed on conductor catenary	45 ft below top of towers	.....	.....

[1] Each conductor one continuous length; no splices between anchor towers
[2] Conductor to tower at maximum (34 deg) side swing
[3] Conductor to tower at maximum (40 deg) side swing (7.6-lb, 70-mph wind)
[4] Between overhead ground wire and top conductor (main span)

for heavy loading conditions in accordance with fifth edition of National Electrical Safety Code. Towers are somewhat lower than those crossing the Sacramento and San Joaquin Rivers. Furthermore, experience indicates that high wind velocities and heavy ice loading are not likely to occur simultaneously. Thus, high-strength conductor, 477,000-cir mils, 30/7 ACSR, was chosen to permit higher tensions than on remainder of line, resulting in some reduction in the sage and the height of the suspension towers.

Safety Factor Is 1.5 . . . Factor of safety for anchor towers is 1.5 for most critical combinations of broken wires in same span under electrical code heavy loading, or intact condition under ¾-in. radial ice load plus dead load and wind load on tower. Factor of safety for crossing towers is 1.5 for any two wires broken in same span under electrical code heavy loading, or intact condition under ¾-in. radial ice load plus dead load and wind at 45-deg on tower.

Towers west of the river are founded on flood plain silts. Those on the east are on low density loess of the bluffs. Treated wood piles were used for all footings, capped with reinforced-concrete pad and stem. Anchor tower legs splice to 6x6x⅝-in. stub angles. Crossing towers are anchored through heavy base detail by three 1½-in. high-strength bolts at each leg.



New Westinghouse relay protects generators from negative sequence currents

The filter in the Westinghouse COQ relay is the key to definite protection of generators from negative sequence currents which can cause serious heating damage to rotors. The reactor and resistor elements in this filter permit only the negative sequence component of current to pass on to an induction-disc, overcurrent element. When this current exceeds a safe value for a predetermined time, the relay operates to protect the generator.

New Standard—The American Standards Association has recognized the damaging effects of negative sequence currents by rewriting the Standard covering the ability of a generator to withstand a short circuit at its terminals. This new Standard expresses this ability in terms of how much negative sequence current the generator can withstand and for how long. There is one obvious way to keep a generator from exceeding the limits it was built to meet, as expressed in the ASA Standard. That is, to design a relay that operates on negative sequence current and time. The new Westinghouse COQ relay has been tailor-made for this job.

The relay has a current range of 3-5 amperes which is subdivided by seven taps. Other features include a simple design requiring no internal transformers, a new die-cast damping magnet and a new E element overcurrent electromagnet. Adjustment of the filter element is very easy, requiring only the movement of a slider on the resistance wire.

Out of the Westinghouse relay laboratory in Newark, N. J., has come, through the years, a constant parade of relay "firsts" such as the COQ relay. For the finest relay engineering, the very latest relay developments, look to Westinghouse.

For more information on the COQ relay, write to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-40455

YOU CAN BE SURE...IF IT'S
Westinghouse

Announcing the new Westinghouse "DX" Cutout

the simplest, most rugged open cutout ever built

One look tells the whole story of this new cutout. The massiveness of the parts . . . the simplicity of design tell you instantly that here are strength and reliability never available before in open fuse cutouts. One look and you *know* that this cutout will stand up under years of weather and rough handling . . . will boost your system reliability and cut operating and maintenance costs.

Here's why the Westinghouse DX Cutout is so *simple:*

No complicated mechanism—no extra gadgets—nothing to go wrong in closing, opening, or re-fusing. When a fuse blows, the simple toggle mechanism provides fast, positive dropout.

Open construction allows fast, safe removal of the fuseholder. Brightly painted fuseholders aid in swift identification of blown fuses.

Unique hinge design insures easy replacement of the fuseholder. Linemen can throw it in from any angle—the top and bottom contacts will always align perfectly.

Here's why the Westinghouse DX Cutout is so *rugged:*

Metal parts are clamped—not cemented—to porcelain. There are no recesses or reduced sections in the porcelain insulator, assuring maximum strength. It's bird-proofed, too—clamping bands are covered with 15,000-volt polyethylene insulation.

Extra-large sleet shields completely protect both top and bottom contacts. Your sleet troubles are over.

Large-area contacts maintain good contact pressure for years. Both moving and stationary contacts are silver-plated.

AVAILABLE NOW

The new Westinghouse DX is the cutout you need to get the performance you've always wanted. And they are *available now!* Ratings: 5.2, 7.8 and 15-kv interrupting capacity, 2000 to 5000 amperes. Contact your Westinghouse Representative for full particulars, and write for DB 38-620, Westinghouse Electric Corporation, 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-60855

YOU CAN BE **SURE**... IF IT'S

Westinghouse

CHANCE WN-VN SWITCHES

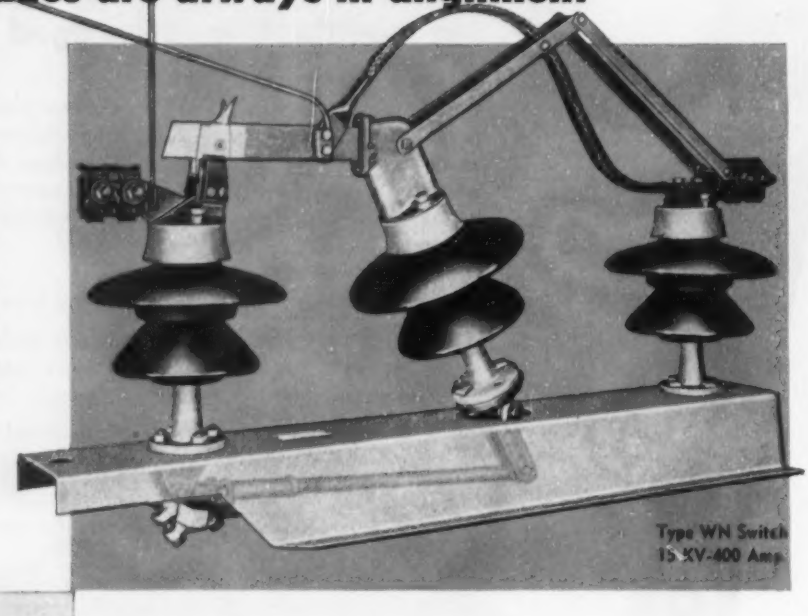
Eliminate Pole Top Switch Adjustments...

WN-VN blades are *always* in alignment

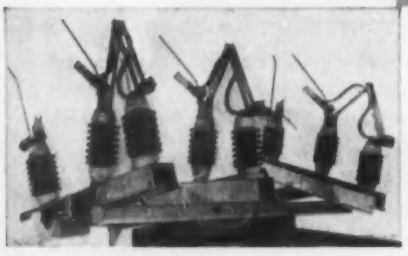
Forget maintenance problems on pole top switches. Chance WN-VN Switches *can't* get out of line!

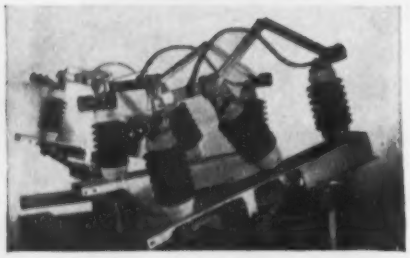
Why? Because these pole top switches have the Chance Compensator Control that keeps the operating force in line with the blade motion. An extra wide tilting insulator mounting gives solid support that eliminates side-play. Bases are deep drawn and flanged —they won't cut into the wood supports and loosen the bolts—they resist twisting and side distortion.

Phantom view shows the exclusive shielded Compensator Control Mechanism that gives extra leverage —offsets structural distortion—prevents insulator shock from "slamins"—simplifies installation.



Type WN Switch
15 KV-400 Amp.





make positive contact under all conditions

You get top performance under all conditions with Chance WN-VN Gang Operated Switches. Switch blades *always* seat regardless of warping, twisting, settling or bowing of the supporting structure. The photographs at left show how the dead toggle on each base permits every blade in a three pole switch to make complete contact in spite of extreme distortion. No special adjustments were necessary to compensate for the distortion on this "torture rack" test.

* * *

Chance pole top switches are easy to install because the interphase shaft is simply lifted and clamped into position—you can even mount them below the pole top without shifting these switches off balance.

For conditions of extreme corrosion, a special protective Neoprene coating for the flexible braid is available at slight additional cost.

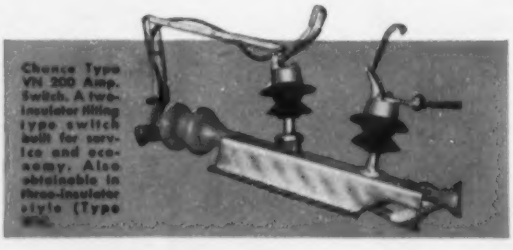
You know it's RIGHT when you specify CHANCE

A·B·CHANCE CO·

CENTRALIA, MISSOURI
SAN FRANCISCO, CALIFORNIA

ABC INDUSTRIES

CS54-1



Chance Type VN 200 Amp. Switch. A two-insulator fitting type switch built for service and economy. Also obtainable in three-insulator style (Type

NEWS ABOUT PEOPLE

Philadelphia Electric Names . . .

. . . Edward Porter senior vice president. His successor as the vice president of finance is Albert Corson, comptroller

EDWARD PORTER

Edward Porter, vice president in charge of finance and accounting for Philadelphia Electric Co, has been elected senior vice president of the utility. Albert S. Corson, comptroller, was named to succeed Porter in the financial post.

Porter started his utility career with the United Gas Improvement Co as a clerk in 1894. After serving in various jobs in the utility's accounting department, he advanced to the position of general auditor. He was named comptroller of Philadelphia Electric in 1928 when that company was acquired by United Gas Improvement. A year later he was elected vice president in charge of the finance and accounting department of Philadelphia Electric, becoming a director in 1943.

ALBERT S. CORSON

Active in Industry Organizations . . . During the past several years Porter has been active in the Edison Electric Institute, Pennsylvania Electric Association, Pennsylvania Gas Association, and American Gas Association.

Corson also began his career in the public utility field, joining United Gas Improvement in 1906 as a clerk. He advanced through various jobs in the accounting department to the post of vice president. He was employed by Philadelphia Electric as comptroller, finance and accounting, in 1949. In recent years Corson has been active with the Controllers Institute, EEI, PEA, PGA, and AGA.

•

Lawrence G. Maechtlen, vice president of Square D Co, has been named manager of the firm's Western Division and will head operations in the main Western plant at Los Angeles as well as plants in Seattle and San Francisco. In another division appointment, **Vice Pres J. H. Pengilly** was made chairman of the executive committee of Square D's Western Division.

Lewis Brown has been named manager of the Grant Electric Cooperative, Lancaster, Wis., to succeed **Arthur P. Smith.** Brown formerly was superintendent of the Freeborn-Mower Cooperative, Light & Power Association, Albert Lea, Minn., which he served for 15 years.

Richard McCormick has been made superintendent of steam-electric power generation for the Central Division of Niagara Mohawk Power Corp to succeed **Ben H. Green,** who was appointed a consultant on steam-electric generation for the utility's system. McCormick, who started his career with the Niagara Mohawk system in 1932, formerly was assistant superintendent of steam-electric stations for the Central Division. Green has been with Niagara Mohawk and its predecessor companies for 46 years.

GEORGE C. McCABE

Potomac Electric Power Advances George McCabe

Potomac Electric Power Co has announced the following organizational changes:

George C. McCabe was appointed manager of the electric system and will assume full responsibility for the operation of the utility's electric system, including substation, distribution, meter, and motor transportation departments, and the buildings and power dispatchers divisions. McCabe, with the company 20 years, formerly was assistant to the vice president in charge of operations.

Dorsey F. Hughes, formerly engineer of distribution in the Distribution Engineering Division, was made assistant to the manager of the electric system. Hughes' successor is Terrill Coons, formerly assistant engineer, distribution.

Lewis W. Cadwallader, general superintendent in the generating department, was named mechanical engineer of the utility.

Wilford J. Robinson, plant engineer at the company's Benning Station, was named superintendent of steam production.

Pacific G&E Promotes Hagar; Names Unit Heads

Pacific Gas & Electric Co has appointed George H. Hagar, a vice president of operations since last summer, to the post of vice president in charge of electric operations.

The company also announced that W. G. B. Euler, executive vice president and former vice president and general manager, has retired after 43 years' service with the PG&E system. He served as a director during the past five years.

Division Appointments . . . The following division appointments were also made: Harry A. Lee was named San Francisco Division manager and William R. Bowler, manager of the San Jose Division.

Lee, sales manager of the San Francisco Division since 1946, replaces Grover S. Tracy, who has retired after 48 years with PG&E. Bowler, who served most recently with the Colgate Division at Marysville, fills a vacancy left after the retirement of Thomas W. Snell, who has served the company for 40 years.

W. L. Greer, commercial manager of Pacific G&E's Sacramento Division, succeeds Lee as the sales manager of the San Francisco Division. Fenton Y. Kraft, manager of the Jackson district, replaces Bowler as Colgate Division manager.

Lawrence R. McDonnell, assistant editor of the utility's newspaper, "P. G. & E. Progress", was named editor to replace Randolph O. McGougan, who retired. McGougan, a newspaperman, is a former president of Northern California Industrial Editors' Association.

•

Robert R. Stevenson, who has been for the last five years assistant district manager of Philadelphia sales office of I-T-E Circuit Breaker Co, including the R&IE Equipment Division, has retired. Stevenson, an electrical engineer who started his career in the utility field, was prior to his I-T-E affiliation a district manager of the Philadelphia office of Railway & Industrial Engineering Co for 20 years.

Prof Roy Bainer, chairman of the department of electrical engineering on the Davis Campus of the University of California, has been made chairman of the California Committee on the Relation of Electricity to Agriculture, which was established about 30 years ago. Prof Bainer succeeds **Harry B. Walker,** professor emeritus at Davis. Walker served as chairman for more than 24 years.

Harry A. Winne, who retired last fall as vice president of engineering of General Electric Co after 43 years' service, has been elected a member of the board of directors of American Gas & Electric Co. Winne, a leading expert in the field of atomic energy, was named in 1946 to a board of consultants to aid the government's Committee on Atomic Energy.

J. V. Honeycutt has been named vice president in charge of sales of Bethlehem Steel Co to succeed **Paul Mackall,** who has retired. Honeycutt, with the company since 1914, has been assistant vice president since 1936. Mackall joined Bethlehem in 1907, becoming a vice president in 1928 and a director in 1932.

Kirby Billingsley, formerly managing editor of the Wenatchee World, has been appointed manager of the Chelan County PUD, Wenatchee, Wash. Prior to assuming the managership, Billingsley served as a member on the PUD board.

Anchor Appoints 2 VP's

Anchor Manufacturing Co, Boston, Mass., has appointed Richard P. Taylor as vice president in charge of sales and Gene Davis as vice president in charge of engineering. Announcement of the appointments was made by George W. Armstrong, president and chairman of Anchor Manufacturing. Ernest G. Johansson has retired, but he will continue with Anchor as a consultant.

OBITUARY

William H. Doran

William H. Doran, 54, president of Metropolitan Edison Co, was killed Jan. 6 in a car-truck collision on an ice-covered highway near the company's new operating headquarters north of Reading, Pa.

Doran began his utility career in 1922 as a meter reader with the former Depew and Lancaster Light & Power Co, Lancaster, N. Y. Several years later he went with New York State Electric & Gas Corp, becoming business manager for the utility's Western New York group in 1934 and vice president and manager for the Lancaster Division in 1937. Later he filled similar posts with the company's Ithaca and Geneva divisions.

WILLIAM H. DORAN

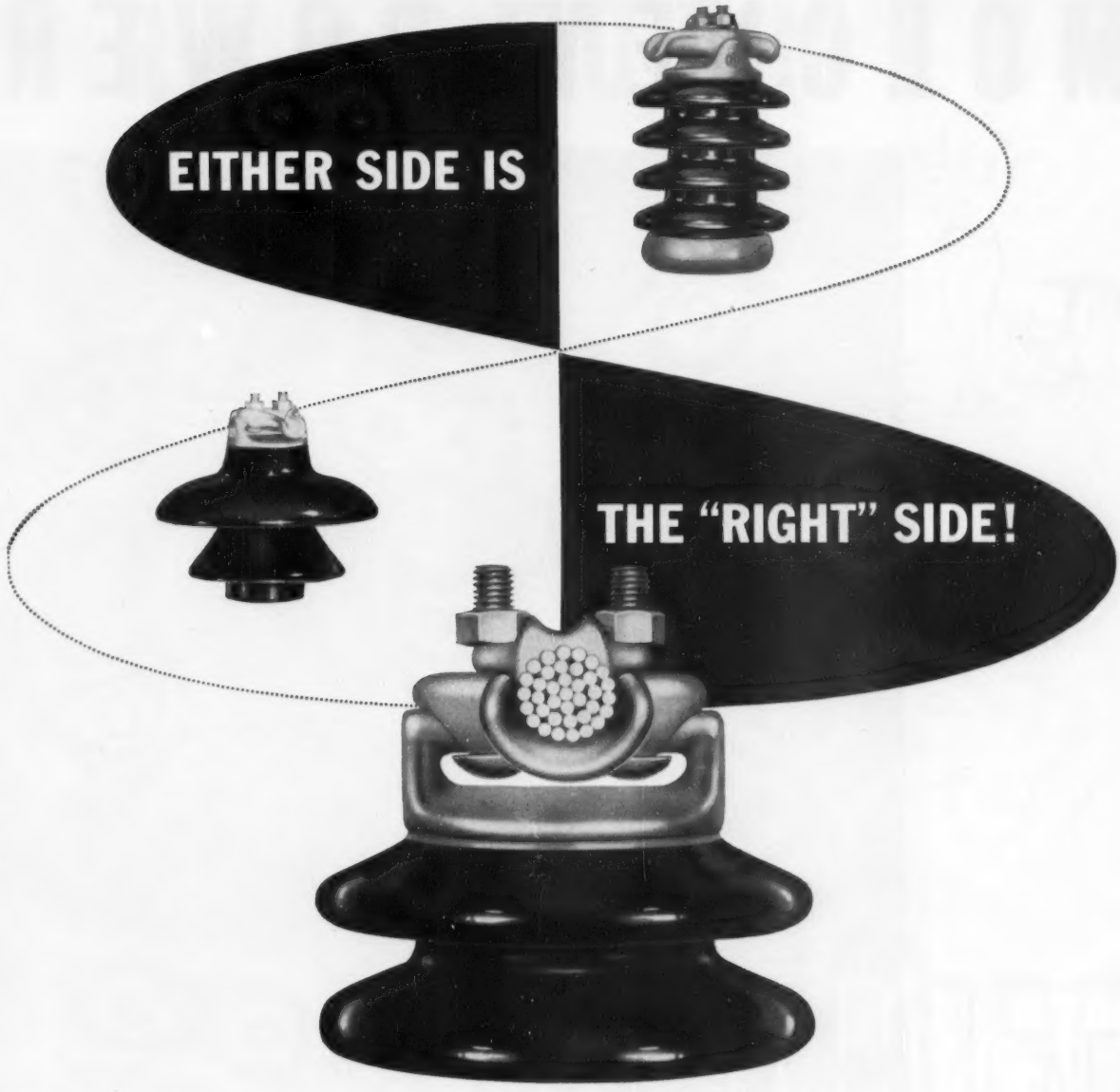
He was elected vice-president in charge of operations and a director of Metropolitan Edison in 1941. He was advanced to executive vice president in 1946 and elected president of the company in 1951.

Doran was a past president of the Pennsylvania Electric Association.

Harry R. Holmes, 86, vice president and secretary of R. Thomas & Sons Co, died recently at East Liverpool, Ohio. Holmes was associated with the company for 55 years. Although he was inactive for the past three years, he served the firm in a consulting capacity.

Walter B. Templeton, 81, founder and formerly chairman of the board of Templeton, Kenly & Co, Broadview, Ill., died recently at Hinsdale, Ill. He served as president of the company for 40 years until 1939 when he was named chairman of the board.

James Norman Smith, 87, supervising engineering of the Westmount powerhouse of Westmount (Que.) Light & Power Department, died Dec. 16 at Montreal, Que., Can. Smith, who designed the original Westmount powerhouse at the turn of the century, assumed the engineering post in 1936, retiring ten years later.



design symmetry gives O-B clamptop easy workability

Since both sides of an O-B Clamptop are alike, the insulator is always placed "Right side out" on the cross-arm. The nuts (there are only two) are located on *top!* This intelligent design cuts down the time men spend on the pole top. They do not have to place the insulator in one certain way when installing it. And since both sides are the same, there's no possibility of finding a "Wrong side out" insulator to complicate hot stick work when a clamp is released and replaced during maintenance work.

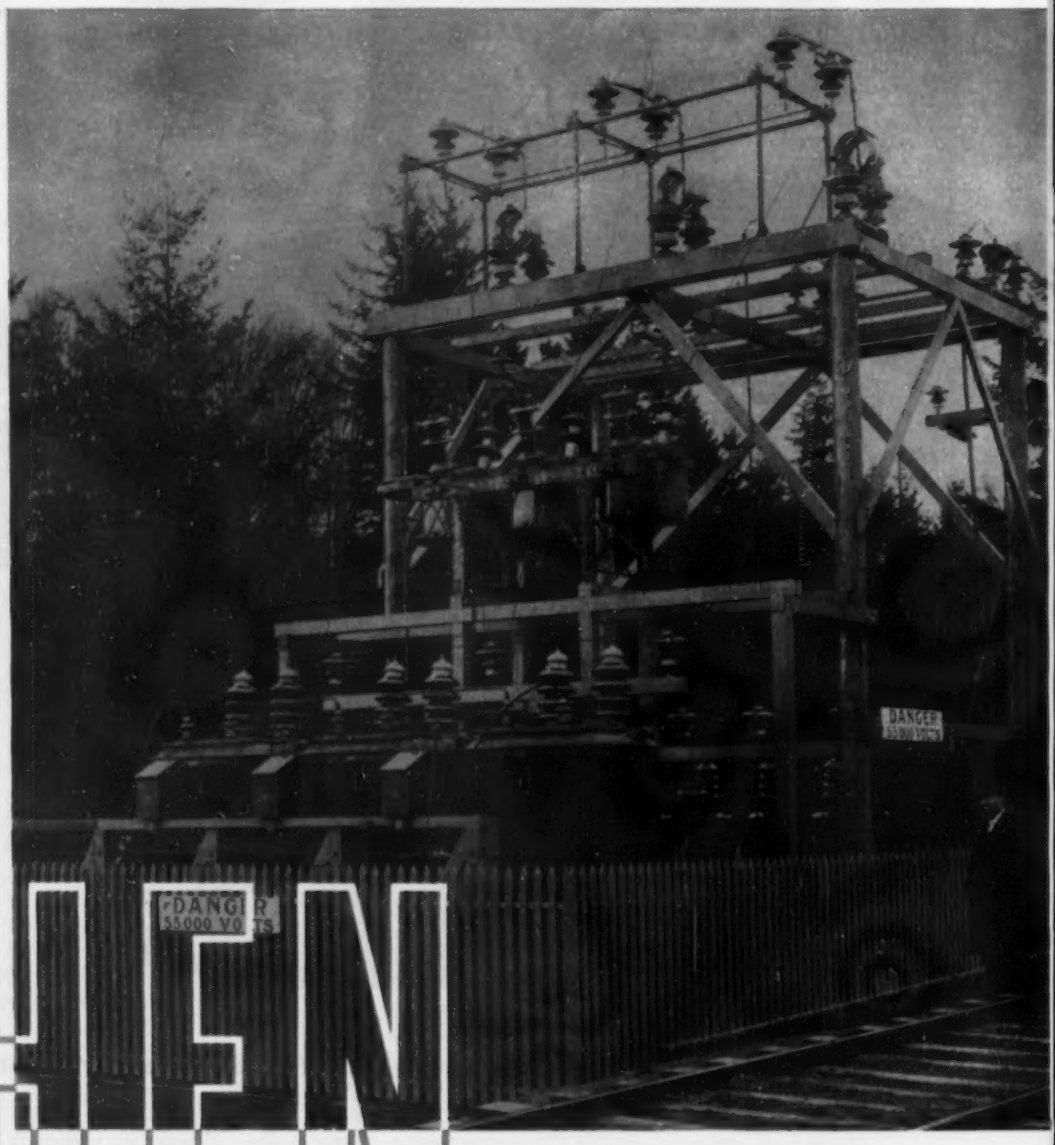
The care required to install a clamptop, and the method of working with it the second time, are factors to consider, for they have a marked effect on the time spent by a lineman on the pole. Talk over the easy workability of O-B Clamptops with your O-B representative!

Ohio Brass

MANSFIELD OHIO, U.S.A.

4432-H

MOLONEY POWER



THEN . . .

MOLONEY ELEC

Manufacturers of Power Transformers • Distribution Transformers • Load Ratio

FACTORIES AT ST. LOUIS 20, MISSOURI AND TORONTO,

TRANSFORMERS

Back when the ice man was a familiar figure, those Moloney Transformers behind the neat picket fence were considered the best in design and dependability. Then, as now, the name Moloney meant "better performance." But, good as it was, that equipment would not begin to meet the utility needs of today. The multiplying demands for electricity make ever-increasing electrical capacity a "must" for utilities. And just as the modern home needs an electric refrigerator designed for today's living, electrical systems need transformers designed to meet today's demands.

Moloney Power Transformers with their built-in, proved superior, Load Ratio Control fit the present power picture. They are compact, dependable, and highly efficient and combine all the engineering, design and fabricating experience, which, with fine materials, produce transformers of the high standard upon which the company built its reputation.

Now, as utility engineers are designing systems of higher and higher capacity to serve their customers efficiently and economically, Moloney is prepared to provide transformers of any Kva or voltage rating required.

For over 57 years Moloney has been building better transformers which give better performance, have greater reliability, and require less maintenance. For further information contact your nearest Moloney Representative.

TRIC COMPANY

Control Transformers • Step Voltage Regulators • Unit Substations

ONTARIO, CANADA • SALES OFFICES IN ALL PRINCIPAL CITIES

Ramon Magsaysay, Philippines' new president, makes an impromptu visit to government's biggest hydro project

Shortly after he took office, President Magsaysay, keenly aware of his country's need for power, dropped in on 75,000-kw Ambuklao project, near Baguio in Northern Luzon

Magsaysay, left, is shown plans of power plant by Guy F. Atkinson, chief contractor, and officials of National Power Corp, government agency building the project

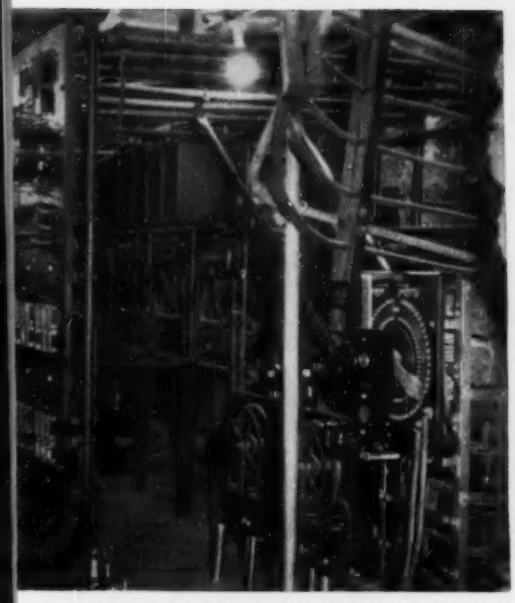
FIRST UNDERGROUND HYDRO PLANT was built by Benguet Consolidated Mining Co. The 1,500-kw

Power Is a

MANILA, P. I. (McGraw-Hill World News)—For an underdeveloped nation which has staked its destiny and very independence on industrialization, the Philippines is not endowed by nature with an abundance of power resources. Coal deposits are low rank, small and scattered. Petroleum has yet to be discovered in commercial quantities. So has nuclear fuel. Philippine planners pin most of their immediate hopes on the untamed rivers and waterfalls of the Luzon and Mindanao mountain ranges. At the moment most power is produced by oil-burning plants.

Electric power development has loomed large in all the economic development plans mapped out since liberation. In the first economic development program drafted in 1947, power was allowed 8.82% of the total outlay recommended to finance that program. In the revised program approved in 1948, 9.3% was assigned to power development. And in the revision of this program in 1950, 10.88% was earmarked for power development.

The new administration of Ramon Magsaysay is placing added emphasis on rural electrification. Characteris-



horizontal Pelton wheel installation is at back of control room, part of which can be seen above

TRANSMISSION TOWERS, to which cattle appear indifferent, are constructed to survive 120 mph winds, frequent in the islands. This line is 115 kv; a 230-kv line is now being built

Cooperative Venture in The Philippines

tically, President Magsaysay immediately after his election went into a series of huddles with Filemon Rodriguez, capable manager of National Power Corporation, the government-owned hydro development corporation.

Making long-term loans to rural electric plant operators will be one of the important functions of the rural credit banks planned by the new administration. Magsaysay as Secretary of Defense in the former administration was known for his relentless drive against the Communist-led Huk rebels. He quit the Quirino cabinet because he felt that it was not doing enough to improve the conditions on which the Huks thrived. Electricity will play a large part in Magsaysay's program of rural reforms. It is expected to do the job in two ways: by absorbing jobless farm workers into industries and by making possible part-time industrialization of the countryside itself through establishment of mechanically powered small cottage industries.

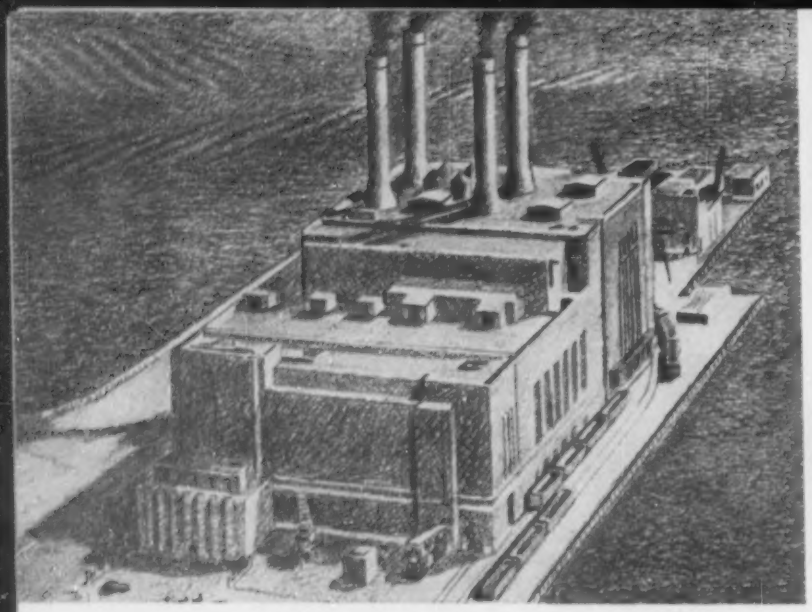
Planned Power

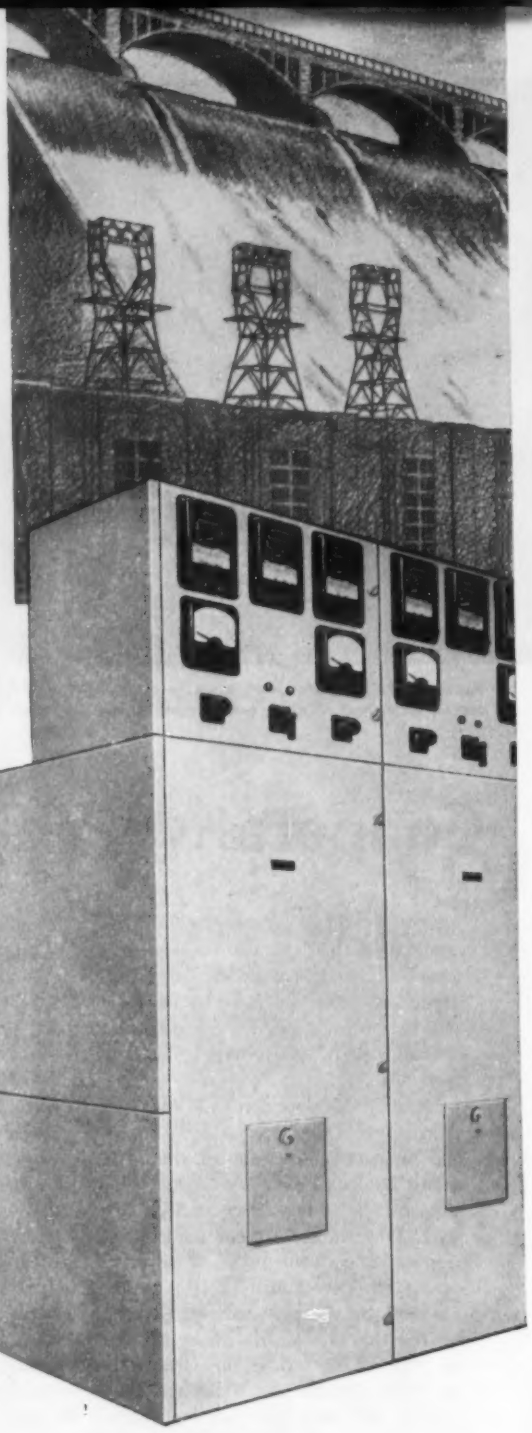
The history of planned power development in the Philippines is the history of National Power Corp. One of several government corporations, and no doubt the one most efficiently run, NPC was legislated into existence in 1936 and set up office a year later with the following basic policies and objectives: (1) To investigate sources of low-to-moderate-cost hydroelectric power; (2) to undertake power market studies; and (3) to push industrial development of the island by providing low-cost power to such industries as fertilizers and electro-metallurgical plants. NPC is not engaged in power distribution but is strictly a wholesaler, selling much of its output to Manila Electric Co, the country's largest private utility. Since NPC started up in business hydroelectric capacity has increased from 20 Mw to 84 Mw.

Major projects planned and completed by the corporation include the Caliraya Dam in Lumban, Laguna Province, with three units of 10,000 kva each, financed by a $4,250,000 bond issue. The capacity was later increased to 40,000 kva by addition of a fourth unit. When the Japanese swooped down on the islands in December 1941 the project was nearly complete. The work was badly damaged in the liberation fighting, however, and required an additional $600,000 loan for rehabilitation. The Caliraya plant is up to now the largest hydroelectric plant actually operating in the Philippines.

Largest project now in the works is the Ambuklao hydroelectric dam on the Agno River in the mountain province of Luzon. The project is the farthest upstream of a chain of dam sites on the river. It is located near the barrio of Ambuklao, near the summer capital of Baguio. Its main features are a rolled earth and rock-fill dam 436 ft high and two diversion tunnels 23 ft in diameter each, an underground power house and a gothic arch tailrace tunnel 21 ft wide, 25 ft high and 8,000 ft long. The capacity of the underground power house will be 75,000 kw. A 230-kv transmission line will be built from the plant to the Manila area.

These projects are part of a program of hydroelectric power development which consists essentially of three parts: (1) development of the Ambuklao and Binga power sites on the Agno river for a total capacity of 175 Mw, complete with transmission lines and substations; (2) expansion of the Maria Cristina project in Mindinao





A TRILLION KWHR by 1965*

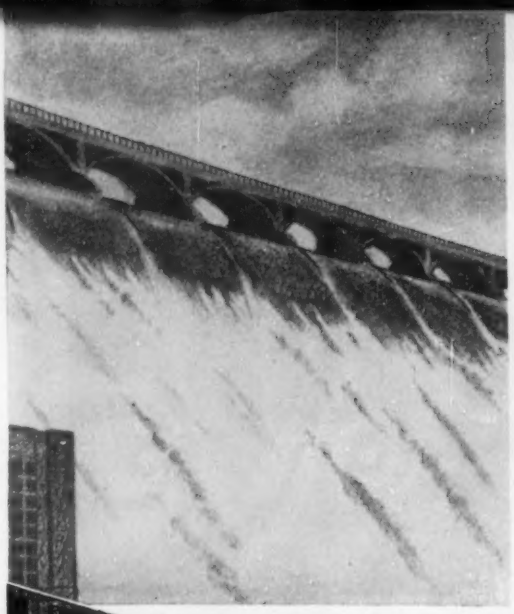
I-T-E is pacing America's greatest electrical expansion

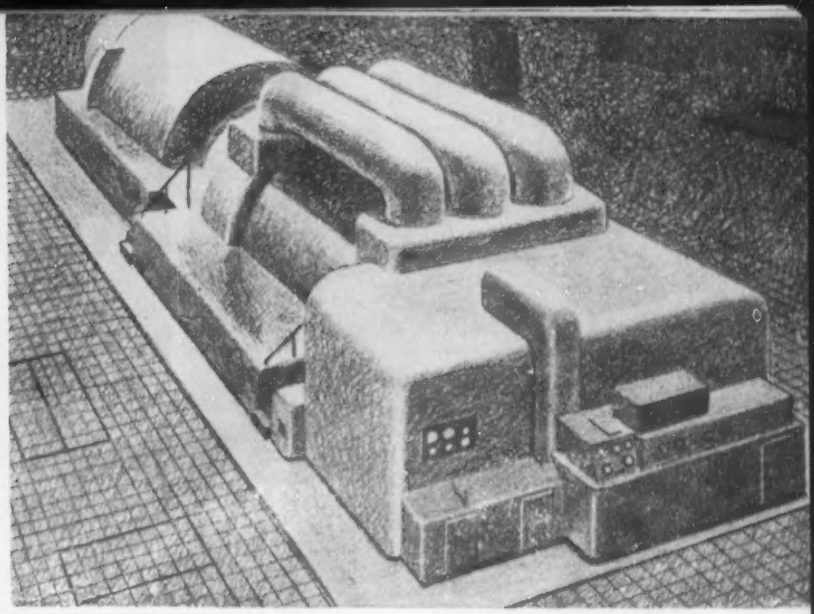
KWHR capacity has doubled in the past ten years and present trends indicate another doubling in the decade to come. New power generation, transmission, and distribution equipment—more of everything—will be required to handle this increased capacity.

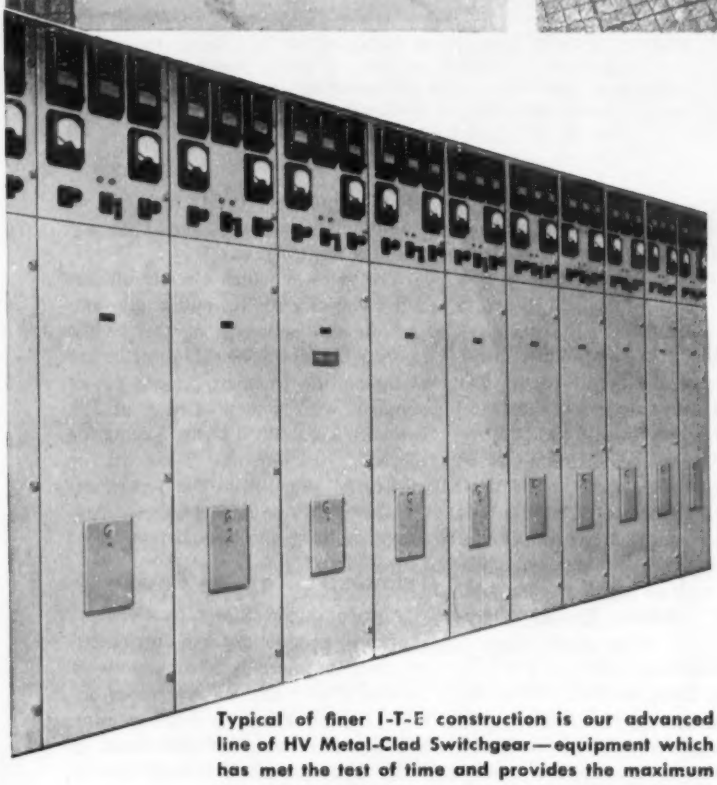
In the past ten years, I-T-E has expanded some twenty fold—supplying quality switchgear for every type of industrial and commercial application. Look for even bigger strides forward—broader lines, more producta, finer designs, and increased production—as I-T-E continues to pace America's greatest electrical expansion.

**Edison Electric Institute*

THE SYMBOL OF QUALITY IN SWITCHGEAR







Typical of finer I-T-E construction is our advanced line of HV Metal-Clad Switchgear—equipment which has met the test of time and provides the maximum in protection and efficiency at a minimum over-all cost.

For details, call the I-T-E field office nearest you. Look in your classified telephone directory under "Electrical Equipment."

Or—write for **Bulletin No. 7004B.**

I-T-E Switchgear embodies...

- advanced engineering
- refined design
- quality construction

Through 65 years, the I-T-E Circuit Breaker Company has achieved outstanding recognition in the industry by persistent effort to advance the switchgear art.

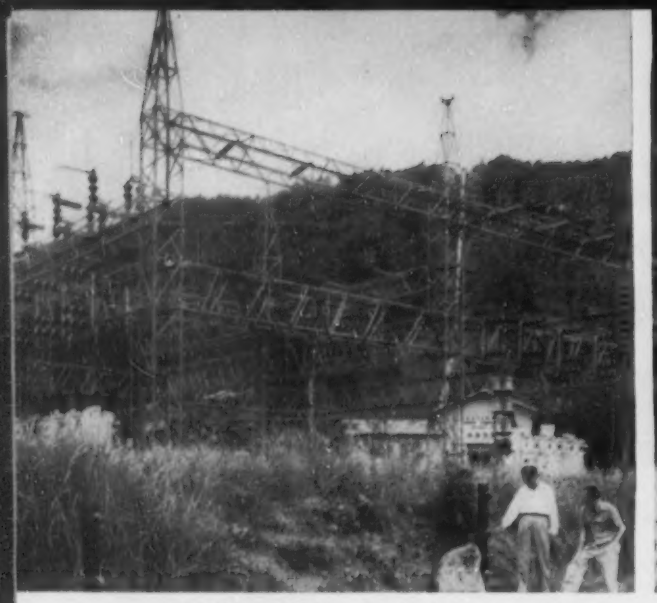
Many switchgear "firsts" are attributed to I-T-E, among them:

- the original Inverse Time-Element (I-T-E) circuit breaker
- the first enclosed circuit breakers and switchboards
- the first high-voltage air magnetic circuit breaker
- the first isolated-phase bus

In addition to the introduction of new ideas and thinking, I-T-E has devoted its engineering skill to accomplishing the ultimate in design and production refinement.

I-T-E Circuit Breaker Co., 19th and Hamilton Sts., Philadelphia 30, Pa.

I-T-E Metal-Clad Switchgear



INTERCONNECTION YARD links government-owned Caliraya line with private-owned Botocan line. Fence, charged with 4 kv, was built by Japanese to keep out guerillas; now it discourages Huk Communist saboteurs

FIRST 25,000-KW TURBINE of Philippines' Maria Cristina Project was installed last year, a second is on order. It will be placed in an extension of the power house to be built on side toward the viewer. Start of penstock can be seen in foreground at right. Another is being built

to an installed capacity of 80 Mw, and expansion of the chemical fertilizer plant to a capacity of 126,000 tons of ammonium sulphate annually; (3) the construction of a number of small projects, scattered over the islands, with a total capacity of 8,000 kw.

The NPC-Meralco Tie

Manila Electric, with a maximum capability of 119 Mw of thermal power and a 15 Mw hydro plant is by far the largest electricity producer in the islands. Established in 1903 as the Manila Electric Railroad and Lighting Co, with the physical assets of the old Spanish Electricista, it has been known as Meralco ever since. It is today a subsidiary of the General Public Utilities Corp of New York.

As late as 1920 Meralco's plant capacity was only 17,000 kw. Meralco pioneered the development of hydro power in the islands. In 1929 it started building the 16-Mw Botocan hydro station 55 miles from Manila. Today Meralco has five thermal units aggregating 38 Mw at its old Blaisdell Station (including three units aggregating 22 Mw installed in 1953) and three units aggregating 81,000 kw at its new Rockwell Station (including 27 Mw installed in 1953). This completes the rehabilitation of the Meralco system. Its further expansion plans will depend on how soon NPC will be able to deliver more hydro power for distribution.

NPC now has Meralco distribute power from its Caliraya hydro installation. This brings the firm's available capacity to 170 Mw, which is 3½ times its 1941 capacity. It serves 229,000 customers, 100,000 more than in 1941. Today Manila is probably the only metropolis in the Far East which knows no power shortages.

Meralco is only one of 300-odd private utility companies operating in the Philippines with an aggregate installed generating capacity of 180,000 kw, though it is bigger than the rest thrown together. In 1937 there were only 200-odd plants with an installed generating capacity of 71,000 kw. Energy generation by electric utility plants shot up from 170 million kwhr in 1937 to 661 million kwhr in 1952. Even so, generating capacity has consistently lagged behind demand. Not only are many urban areas supplied inadequately, but among towns in the 5,000 to 10,000 population bracket, 83% have no electric power supply at all. In all only 371 towns and villages are supplied with electric power. This is a very small proportion of the total number of communities in the islands. The gross deficiency of power looks even worse if the well-supplied metropolitan area around Manila is considered separately. Sixteen power areas supply a population of 13½ million with only 67 million kwhr annually. The per capita electric power and energy consumption in this large area comprising two-thirds of the Philippine population is therefore only about 5 kwhr a year.

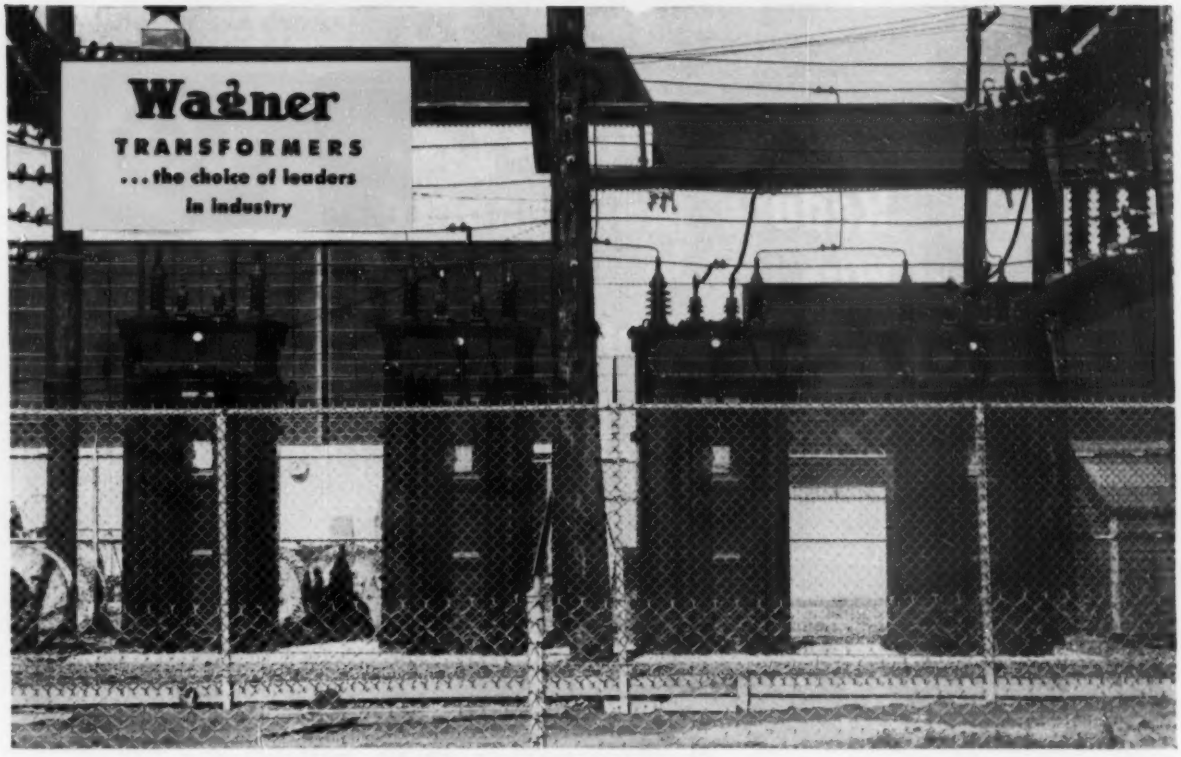
The rates at which electric utilities sell electricity to the public are subject to the approval of the Public Service Commission. Manila Electric is by far the cheapest private power supplier, with residential rates of 7½ cents for the first 30 kwhr, 5 cents for the next 30 kwhr, and 2½ cents for all excess. Some rates charged by inefficient small producers in the provinces are the highest in the world.

Formosa's Taiwan Power

Across Luzon Strait in Formosa (Taiwan), production and distribution of electric power is a monopoly of Taiwan Power Co, a government entity. Taiwan Power is implementing a five-year plan to be completed in 1957. It contemplates the addition of fourteen generating plants with an aggregate capacity of 300,750 kw, of which 214,750 kw will be hydro and 86,000 kw thermal. Some of the plants are already under construction. During 1953 one plant of 53,000 kw was completed. Taiwan's installed capacity increased from 275,300 kw at the time of the Japanese surrender to 304,100 kw in 1951. Production jumped from 354.9 million kwhr to 1,285.1 million kwhr in the same period.

Electric power in Taiwan is prin-

(*Continued on page* 52)



power to build a flying "Work Horse"

The helicopter is a machine of marvelous maneuverability. It can fly straight up or down, go forward or backward, fly fast or slow—high or low! The tandem-rotored Air Force H-21 "Work Horse," capable of carrying up to 20 troops plus crew of 2, is a product of the pioneer builder of transport helicopters—Piasecki Helicopter Corporation of Morton, Pennsylvania.

Piasecki occupies the world's newest and largest helicopter plant, where electric power is delivered by the bank of Wagner Power Transformers shown in the photograph above.

Banks of Wagner Power Transformers can be found at many great industrial plants . . . for the task of supplying power for the manufacture of mighty machines—used on land, sea, or in the air—is a familiar one to thousands of Wagner Transformers.

Wherever electric power is used—in industry, commerce, city and farm—Wagner Transformers are found on the job, supplying proper voltages for every purpose.

Your nearby Wagner engineer can help you select the right transformers for *your* needs. Call the nearest of our 32 branch offices, or write us.

WAGNER ELECTRIC CORPORATION
6456 PLYMOUTH AVE., ST. LOUIS 14, MO., U.S.A.

BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

ELECTRIC MOTORS
TRANSFORMERS
INDUSTRIAL BRAKES
AUTOMOTIVE
BRAKE SYSTEMS—
AIR AND HYDRAULIC

WT53-13

Increase Efficiency... Reduce Maintenance With KEARNEY Pole Line Equipment Designed to Help Your Linemen Do a Better Job FASTER!

Dead End Self-Supporting Bare Neutral Service Cables with the KEARNEY WEDGE-TITE CLAMP

The Kearney Wedge-Tite Clamp is built with a serrated wedge that grips the bare wire with a force proportional to the strain put upon it. This strain is not transmitted to the insulated conductors thus eliminating insulation creep and the danger of leakage and shorts.

Serve Guy Wire Strand Ends Permanently with the KEARNEY FINGER GRIP GUY CLIP

To use this clip no special tools are required and it is impossible to position incorrectly. These clips are easily inserted between the strands and tabs are bent around the wires. Clip is made of aluminum and will outlast the strand itself. Faster and neater than using waste strand.

Seal Out Oxidation and Corrosion on Any Connection with KEARNEY AIRSEAL

Kearney Airseal is a pliable high-dielectric compound which is chemically inert. It is the most nearly perfect material on the market today for sealing out moisture, oxidation and corrosion. Airseal is applied by kneading it over the terminal or connector to be protected, forming a protective coating impervious to moisture and contaminated atmospheres. For any connection protection problem—investigate Kearney Airseal.

Eliminate Radio Interference— Use KEARNEY NON-STATIC GROUND WIRE CLIP

Ordinary staples are entirely inefficient in securing ground wires because the contact pressure is dependent upon their hold in the wood and loosening causes air gaps to develop between staple and ground wire. These air gaps cause radio interference.

The Kearney Non-Static Clip completely eliminates the air gap and resultant interference because the pressure between the clip and wire is entirely independent of the clip's grip in the wood.

JAMES R. KEARNEY CORPORATION
4224-42 Clayton Avenue, St. Louis 10, Mo.
Canadian Plant — Guelph, Ontario

KEARNEY Gives a Little More for a Little Less

Through Engineering

Unusual lighting that makes Birmingham store look wider is . . .

. . . Helping Customers Pick n' Choose

Good light with soft brightness without glare is drawing increasing numbers of customers to the attractive Lad n' Lassie store of A. R. Mazer in Birmingham, Ala.

The unusual arrangement and use of fluorescent lights bring into focus the distinctive merchandise displayed on counters and display cases.

The store owner says the arrangement of the lighting makes it easier for customers to pick out and appraise merchandise. His business has increased about 50% since moving to the new store. He attributes part of it to the new and larger building, but also a good part of the increase to the new lighting system.

The lighting was installed with the idea of making the store look wider.

Mazer also wanted something different from just fixtures in straight rows. The unusual arrangement not only gives even distribution of light throughout the store but spots special displays of merchandise and attracts public attention.

The full length windows across the front of the store provide open view to the unique lighting arrangement as well as to merchandise. The small side display window serves to break monotony and pin-point special merchandise. Both areas offered opportunity for use of various lighting arrangements. Results in each area were attractive and pleasing.

Total lighting load is 12,320 watts including 4470 watts of general lighting, 2200 watts in shelves and wall cases, 1650 watts in windows, 300 watts in doorway, and 3700 watts in stockroom and office.

TV Viewers Having a Ball with Electric Range Party

Evidence of the value of television in promotion of electric cooking comes from the New York State Electric & Gas Co. The company produces a weekly half-hour program, "Electric Kitchen Party," which features the preparation of a complete meal. No specific commercials are included, the selling points being worked into the show.

In an effort to test audience size, an announcement was made on the program offering regular monthly recipe mailings to viewers. From the total of 6,477 replies, 4,283 came from customers in southern New York, served by the company, and the remainder from Pennsylvania. The 5.8% return from the 73,912 television families covered by the station in New York was considered highly satisfactory.

To determine the viewers' opinion of the program, a questionnaire was mailed to 1,000 customers selected from the permanent mailing list. The 388 replies received represent a cross section of electric customers served by the company since 140 respondents reside in cities, 103 in villages, 104 in rural communities and 41 on farms.

Seeing the program every week was reported by 84% of the replies, every two weeks by 13%, and monthly by 3%.

That the time and day of the program are convenient was noted in 92% of the replies and 99.5% said they liked the kind of presentation.

As to other features suggested for inclusion in the program, 62% voted for general household tips, 32% for freezer preservation of food, 5% for home lighting demonstrations, and 1% for tips on home wiring.

Since the program is designed as a service to the users of electric ranges, it was gratifying that the survey showed the high proportion of 42.3% of such users, as appears in the accompanying tabulation.

Here's what New York State Electric & Gas found when it asked:

"What kind of range do you use?"

	Responses	Electric		Gas		Bottled Gas	
City	140	47	34%	94	67%	5	4%
Village	103	51	50	36	35	18	18
Rural	104	49	47	20	20	30	29
Farm	41	17	42	6	15	15	37
	388	**164**	**42.3%**	**156**	**40.3%**	**68**	**17.5%**

Con Edison's Staff Enlarges Its View

It's hot in that there stoker-fired boiler

You wouldn't know it was a substation

Utility systems often sprawl over tremendous areas. Plants may be scattered over a state or even several states. Employees have to depend on words and pictures to get a feeling for the big jobs their companies are doing.

Consolidated Edison Co of New York, Inc, took advantage of its compact area to enable supervisory and staff people to visit company installations and see for themselves.

In four planned tours 1,400 men and women jumped at the opportunity to sample the spice of variety—and get sore feet. As one desk-bound supervisor put it, "if a picture of a turbine is worth 1,000 words, a tour of a generating station is worth 10,000."

Each employee had a day off for the tour. The places visited coincided with the wishes of the persons who chose to take the trip. Questionnaires had been circulated beforehand. The answers indicated particular interest in the company's mechanized bookkeeping operations, telephone and dispatching service, shops, and the system operators board, as well as electric generating stations. Many groups visited the company's training facilities to see how linemen and splicers are trained. The fire school came in for a good deal of attention.

A busload of about 40 made up a party. Guides were ready at each location to conduct the group and explain operations. Often the group was divided so that everyone had an opportunity to ask questions of the guides. And quite frequently old friends were spotted and acquaintances renewed.

With a day "in the field" behind them, the visitors, many of whom are office workers, had a refreshed vision of the complexity, versatility, and just plain size of their company's activities.

Here the dirt is separated from the smoke

Viewing Astoria from another angle

Kuhlman Rural Distribution Transformers help provide a dependable source of power for America's Farmers

Spanning hundreds of thousands of miles of countryside, the lines of America's utilities now reach out to farms in nearly every county of the nation, bringing electricity for light and power. Electricity also runs milking machines, incubators, hoists and other farm appliances; electricity pumps water to thirsty fields and transforms barren wasteland into fertile farmland.

●

With America's harvest depending so much on a steady and reliable power supply, the equipment that carries the load must be dependable. Installing Kuhlman Rural Distribution Transformers is a safe, sure method of providing complete and certain dependability on rural lines. Made in Standard and CSP models, these units are specifically engineered for voltage regulation, economical service and maximum customer protection. They incorporate the bent iron core, developed and perfected by Kuhlman, coordinated insulation and wide oil ducts to give ample cooling. Strong, sturdy construction and careful finishing enable these hardy transformers to operate with utmost reliability and minimum attention under severe weather conditions. Utility executives can get complete information about Kuhlman Rural Distribution Transformers by writing today for Bulletin CS-401. Kuhlman also manufactures Power, Dry Type, Subway, Saf-T-Kuhl, CSP and Series Street Lighting Transformers, and we will be glad to send you our bulletins on these units also.

143-M

KUHLMAN

KUHLMAN ELECTRIC COMPANY, BAY CITY, MICHIGAN • Southern Division, CRYSTAL SPRINGS, MISSISSIPPI

EXPORT REPRESENTATIVE: INTERNATIONAL STANDARD ELECTRIC CORP., 15TH FLOOR, 50 CHURCH STREET, N. Y. 7, N. Y. CABLE ADDRESS: MICROPHONE, N. Y.

SIXTY YEARS OF PROGRESS IN THE ELECTRICAL INDUSTRY

(Continued from page 46)

cipally hydro-generated. It is estimated that 7.45% of the potential water power reserves of Formosa have so far been developed. This is the second highest percentage in Asia after Japan. The major installations were built in the period of Japanese sovereignty, with American loans. The capacity of hydroelectric power plants aggregates 250 Mw, which is 82% of the island's installed power capacity of 304 Mw.

TPC has 540,000 customers in a population of 8,500,000 and estimates that each "customer" represents eight persons. There is a uniform rate of two U.S. cents per kwhr for the whole island, whether customers are in rural or in urban locations. Until December 1951, when a 66-kv East-West tie line was completed, TPC operated two systems, one on the east coast and one on the west coast. Since 1949 the western system had been facing a severe shortage while in the eastern grid there was a surplus of power.

In the last stages of Japanese occupation the island's aluminum industry was the biggest consumer of power. In 1943 it used 347 million kwhr, about 38% of the island's total industrial consumption. The Chinese government emphasizes the development of power consuming industries closely related to living standards.

Window on Red China

Hongkong Electric Company, Ltd, 65-year old sole franchise holder in the British Crown Colony on the Chinese mainland, reports that the load on its system is now approximately three times that recorded in 1941. Installed capacity, however, has less than doubled to 142 Mw (including 20 Mw completed in 1953) from 86 Mw before the war. Electric power production per 1,000 Hongkong population is the second highest in Asia after Japan. This reflects the power demands of many refugee industries from Red China. The company, in common with utility operators in other parts of the British Commonwealth, continues to struggle with suppliers in the United Kingdom for delivery priorities. Equipment promised for delivery 18 months ago has not yet arrived. The present plant, now groaning under constant overloads, is being thoroughly overhauled.

McKee Answers Critic of Clearwater Projects

Political motives behind criticism of the 'partnership' plan of five Pacific Northwest private utilities to build two hydroelectric dams in Idaho has prompted Pres Paul B. McKee of Pacific Power & Light Co to defend the joint proposal which had resulted from Idaho Gov Len Jordan's move for local interest participation in Columbia basin development.

McKee spoke out in answer to charges by Oregon State Sen Richard L. Neuberger, Portland Democrat and public power partisan, who had declared the "state of Oregon can only suffer by the piecemeal type of multipurpose river development contemplated by the five power companies on the Clearwater River, more than 400 miles from here (Portland), in Idaho." He added, "A river system must be treated as a unit, not chopped up into helter-skelter pieces."

The utility company president's statement declared: "Neuberger plainly is more interested in building up a fake political issue than he is in building dams to support the growth of the Pacific Northwest. The Clearwater River plan that he opposes is exactly the same plan the Army Engineers are recommending as part of the over-all development of the Columbia River basin. The five companies are proposing to build the same type of dams to accomplish the same purposes at the same points on the river."

McKee spoke up a few days before Secretary of the Interior Douglas McKay, speaking in Portland to a statewide Republican party assembly, took his home-state party leaders to task for not standing up to critics of the Eisenhower power program. McKay specifically mentioned Neuberger in his talk and said Republicans—and businessmen, who he said had too much at stake to be quiet—were undermining public confidence in the administration by their silence. McKay's tone was one of anger, of one wronged by friends' disloyalty. Since then, Republican leadership has stiffened in answering policy critics.

POWER BRIEFS FROM THE NEWS

● New Washington State Power Commission plans to establish headquarters in Seattle as soon as office space can be obtained. The commission will meet Jan. 22 in Seattle to discuss rules of practices and procedures.

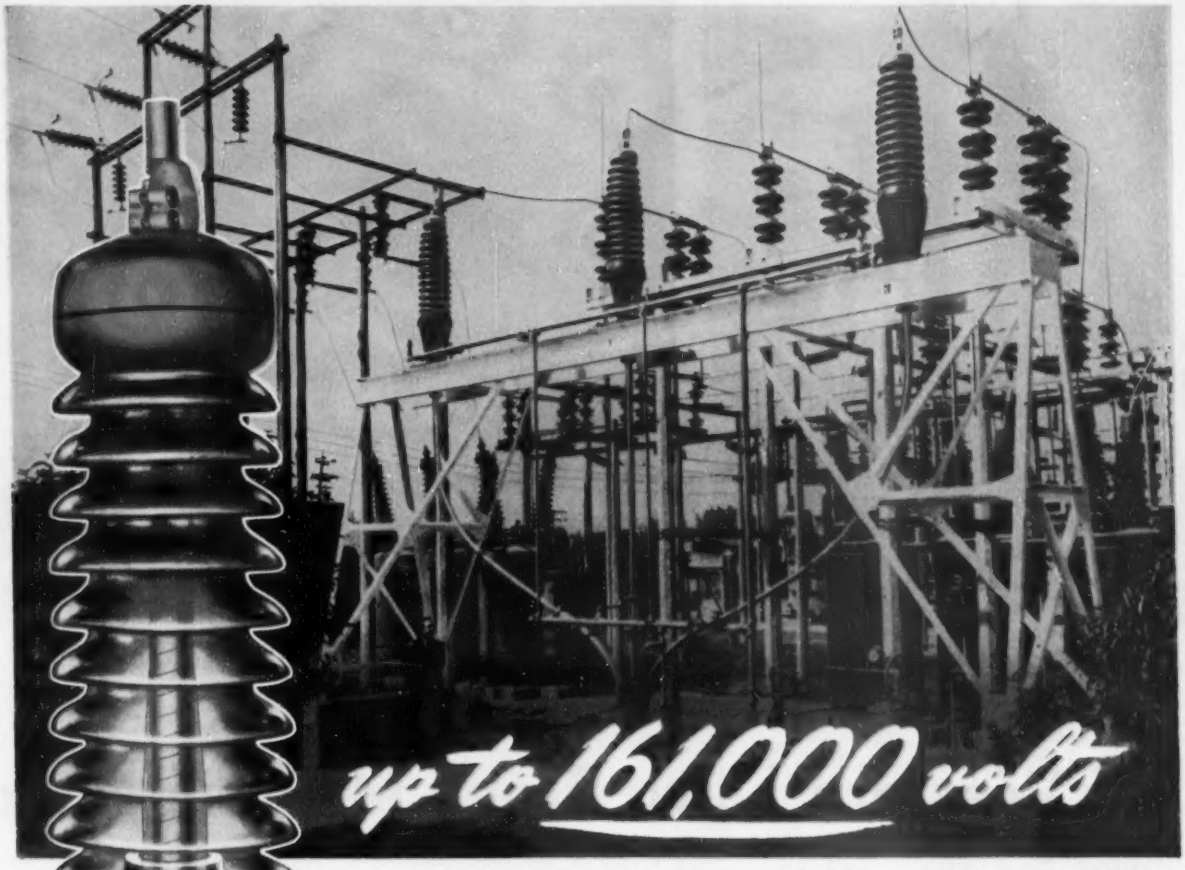
● A number of large generating units were placed in service last month by utilities and power agencies. Niagara Mohawk Power Co put a 100,000 kw unit on the line Dec. 21 at its Charles R. Huntley Plant at Buffalo. This unit, with another of equal capacity scheduled for completion this month, will bring the plant's rated capacity to 785,000 kw. First of three generators at Bureau of Reclamation's Canyon Ferry Dam has been placed in operation. Unit has a capacity of 16,667 kw but is not expected to operate above 14,000 kw for some time to come. First power from the unit is being sold to Montana Power Co.

● Dairyland Power Cooperative, La Crosse, Wis., has applied for a $9,048,500 loan from the Rural Electrification Administration to purchase a new 55,000-kw unit for its Alma steam plant to meet anticipated 1955-56 requirements, and for construction of a heavy transmission line from Alma to Elk Mound.

● Commonwealth Edison Co's record peak load of 3,149,000 kw in 1953 was established between 5:30 p.m. and 6:00 p.m. Dec. 23. This compares with 3,012,000 kw in 1952 and represents 96% of the "net effective" capacity of the Commonwealth system.

● First boiler and turbo-generator unit of the Sandow power plant, which will furnish lignite-fueled electricity to the Rockdale (Tex.) Works of Aluminum Co of America, has been placed in operation. The initial 80,000 kw unit is one of three slated to power the works.

● Consumers Power Co established an all-time electric peak load and daily send-out records on Dec. 21 and 22. The new peak of 1,170,000 kw set on Dec. 21, exceeded by 55,000 kw the previous peak established on Dec. 22, 1952. Maximum daily send-out of 22,550,000 kwhr on Dec. 22 topped the 21,369,459 kwhr mark set Dec. 23, 1952.



HIGH PRESSURE...OIL FILLED POTHEADS by G & W

Proper treatment of mechanical and electrical stresses permit this simple G & W design. Full 200 pound pipe line oil pressure is retained by the relatively small bore porcelain shell. Top and bottom fittings are fabricated, nonmagnetic, stainless steel—sealed by a minimum of gasketed joints.

Stress relief cone, supplemented by porcelain stress control tube, makes efficient use of the internal diameter and length of porcelain shell—and reduces the amount of installation labor.

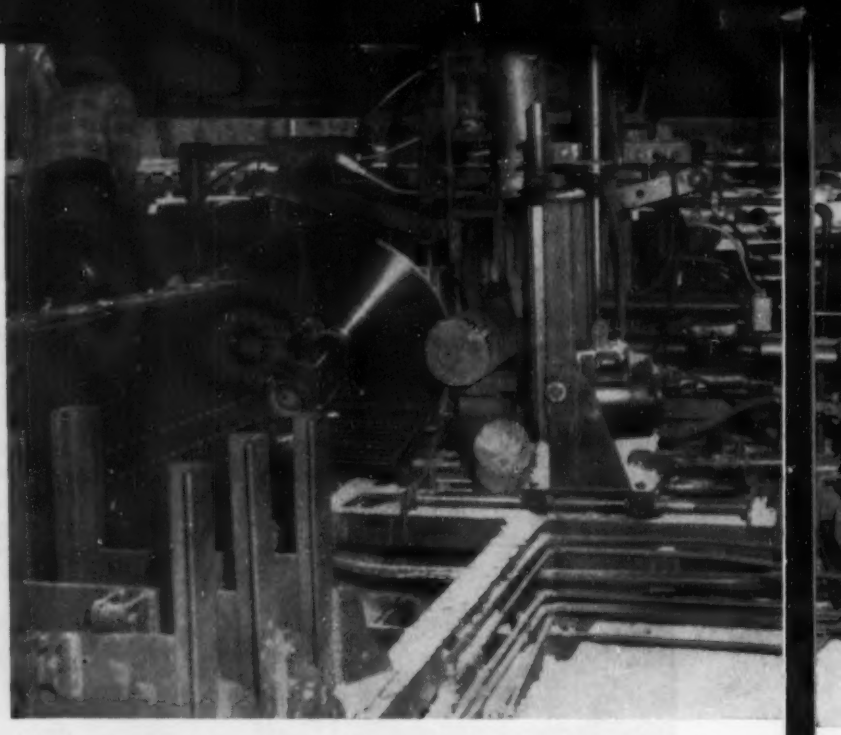
Phantom view shows G & W type "ATA" 161 kv. pothead. Background installation shows G & W type "ATA" 115 kv. potheads.

For further data, drawings and prices, send us a complete description of your cable.

G & W is now in a position to furnish Cable Joints, Oil Reservoirs, and accessories for oil and gas filled cables up to 161 Kv.

G & W ELECTRIC SPECIALTY CO.
7780 DANTE AVE., CHICAGO 19, ILL., U. S. A.
Cable terminating, connecting and sectionalizing devices
Representatives in principal cities of U. S. A. In Canada—Powerlite Devices, Ltd., Toronto and Montreal

Supply is adequate . . .



Modern treating plants have been established . . .

Western Larch Trees May Fill Need

FRED M. REITER, Material Research Engineer, Dayton Power & Light Co, Dayton, Ohio

The western larch tree may be the answer to the industry's growing demands for transmission poles. Larches are tall, straight, clean, and admirably suited for this purpose. And their supply is abundant. Areas of Montana, Idaho, and Washington are reported to contain 1 million acres of larch forests. The local forestry service is encouraging their use and has indicated that about a million poles a year can be taken from these sources.

Dependable modern treating plants, capable of producing good poles, have been established in the area. So a steady supply of poles is assured.

Larch Poles New to Industry . . . The properties of western larch present some advantages (See table). Their greater unit strength and slender, almost cylindrical lines, offer features useful in many applications. The disadvantages are very thin sapwood and proneness to checking. But their greatest disadvantage is that they have no long history of general acceptability among utilities. They were, one might say, just introduced to the industry during the pole scarcity of the late 40's when it seemed essential to try out new sources that had promise of a substantial future supply.

Dayton Power & Light was one of the companies willing to try western larch poles. It purchased a number of car loads for its construction program started in 1950. All poles received were slender, straight, and tough. Line crews could hardly distinguish them from jack pines in color, appearance, surface characteristics, and "feel" in climbing.

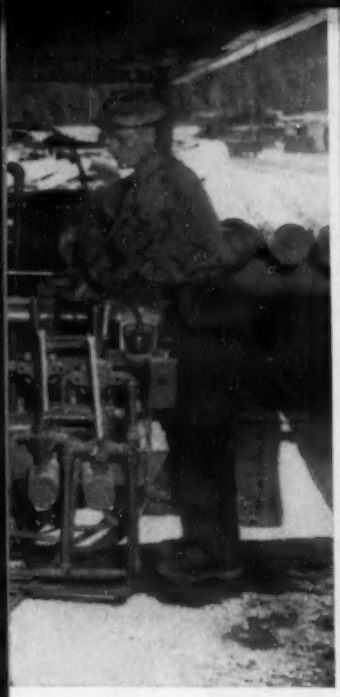
Specifications . . . In order to assure optimum service, specifications were made as severe as possible within reason. The supplier agreed, therefore, to some significant deviations from standard ASA and AWPA specifications. The circumference of the tops of all poles was not to exceed 90% of their circumference measured 6 ft from their butts. This was done to obtain larger topped poles.

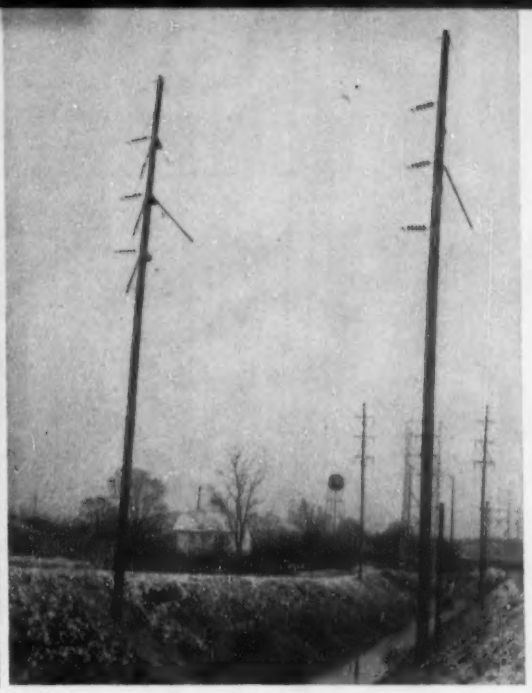
The relatively greater diameters of the upper section would tend to resist the gradual lean or "weep" that occurs in poles supporting unbalanced loads. This was noticeable in poles that support street lamps on long suspensions. The use of "dual class" poles for supporting street lighting and other unbalanced loads was thus avoided, such as Class 5 poles with Class 4 tops. Most producers put all poles through surface shaving equipment as a standard practice for lowest cost. This serves to remove projections and roughness and cleans the pole of inner bark for a final smooth finish.

Light machine shaving has become the generally accepted method. Machine shaving western larch species of poles requires caution to avoid removing their natural uneven growth that strengthens weaker sections.

Twist . . . Some difficulties have been experienced with many types of wood pole species in the rotation of crossarms mounted on poles which have twist. Normal specification calls for not more than one full twist of fibers in 20 ft of length of the pole.

Western larch specifications were set up, with the agreement of the supplier, on the basis that one turn of twist must not occur in less than





They look good; so . . .

for Transmission Poles

40 ft of pole length. This assures only one-half the rotation that would occur with the 20 ft pitch normally allowed.

Conditioning . . . Standard practice in conditioning western larch poles provides for air drying over long periods in order to permit most of the checking before treatment. This allows the preservative to work into the deepest crevices.

Dayton P&L's specification calls for conditioning green poles by moisture removal in hot oil held at from 180 to 200F for not less than 12 hours, under a minimum vacuum of 22 in. mercury. Under this vacuum the water is removed at relatively low temperatures and harmful high temperatures are avoided. Boultonizing and vapor drying seem to reduce concentrated checking.

Western larch poles so treated resemble southern pine poles in appearance. Checks are small and well distributed around the circumference.

Treatment . . . In the treatment of poles penetration and retention are both important. However penetration has been of greater concern in the treatment of all woods than the amount of oil concentrated in the penetrated depth of the sapwood. Dayton P&L has received 100% penetration on all deliveries. The minimum requirement is 85%.

Retention has been consistently supplied at better than 150% of the minimum required. Figures from a sample report show a measured retention of 6.04 lb against minimum specification requirement of 4 lb of creosote per cubic foot.

Preservative . . . Preservative used in the treatment of western larch poles has been the lighter No. 1 grade of creosote oil. A minimum percentage of the lighter fractions of the creosote oil has been specified.

A program of topping or capping all western larch poles has now been extended to all species of poles. Coal tar or railroad tie compound is brushed or troweled over the tops to form a thick plastic layer that will not harden, check, or crack in subfreezing weather or melt in hot summer periods. Extra life is expected from poles because of this very low-cost coating. It reduces the possible splitting by successive freezing and thawing of water and snow that accumulates in checks or crevices during winter.

While steaming is not required where the creosote oil contains less than 25% residue above 355C, all western larch poles received have been steamed by the supplier, voluntarily.

Western Larch Poles Compare Favorably with Others

Physical Property	Western Larch	Western Red Cedar	Douglas Fir	Southern Pine
Strength of Wood				
Maximum moment (1,000 ft lb)	232	233	230	229
Fiber stress (psi)	8,400	5,600	7,400	7,400
Hardness rating	760	350	670	870
Relative shock resistance	100	53	94	106
Circumferences				
Groundline (All tops 25 in.)	47	54	49	49
Diameters				
Goundline (All tops 8 in.)	15.2	17.1	15.6	15.6
Cross section area				
Groundline (All tops 50 sq in.)	177	234	192	192
Volume (cu ft)	48	60	51	51
Weights				
Weight per cu ft (lb)	42	28	41	56.4
Calculated gross weight (lb)	2,000	1,690	2,100	2,900
Normal field gross weight (lb)	2,840	2,400	3,000	4,125

READY TO START moving the 750-kva General Electric network transformer, with submersible protector, from trailer to vault. Notice the room air-conditioning units in the windows—one of the reasons why more capacity is needed here.

Potomac Electric, Washington, D.C., installs G-E network unit to meet extra-heavy load demands

System reinforced with 750-kva G-E transformer and network protector

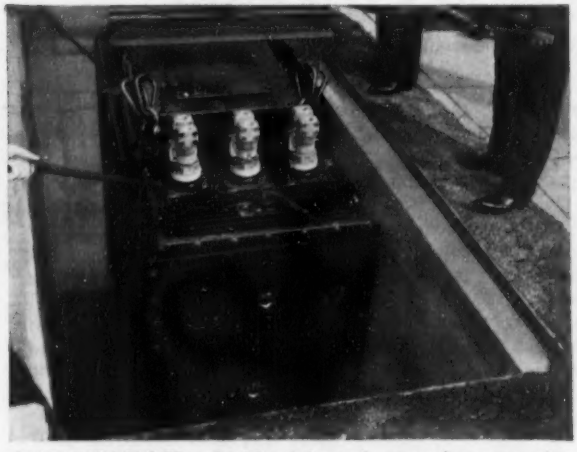
The flexibility and ease of expansion provided by a secondary network system certainly "pays off" for Potomac Electric Power Company in downtown Washington, D. C. Flexibility of the system permits load growth additions with minimum interference to service in the highly concentrated downtown area.

The financial district is experiencing a phenomenal growth and the consequent heavier load requirements, including air-conditioning in existing buildings in the area, necessitated installation of this 750-kva G-E network transformer. The unit, equipped with a submersible automatic network protector, is located at 730—15th Street, N. W., directly in front of the American Security and Trust Company building.

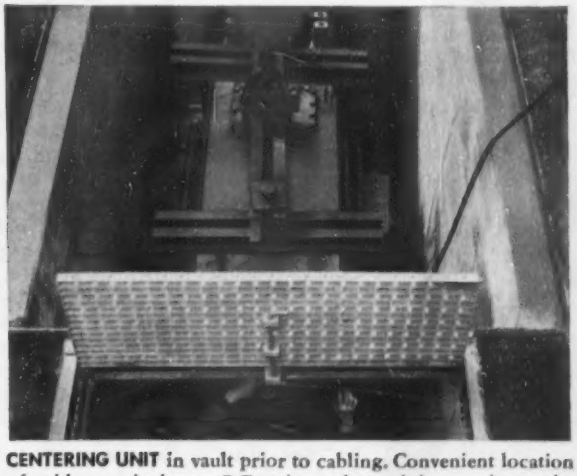
Compactness of G-E network units permits minimum vault depth (7 feet to roof slab) for lower installation cost.

It pays to start a network. Although the change from a radial to a network system means substantial initial expense, future increases in capacity require less investment with a network system. With a growing load, the sooner the network system is started, the lower the ultimate cost. Why not investigate the advantages for your system?

For help in solving your network problems, and for complete information on the many advantages of G-E standardized network units, get in touch with your nearest G-E Apparatus Sales Office, or write for Bulletin GEA-5024, General Electric Company, Section 431-201, Schenectady 5, N. Y.



ALMOST IN PLACE and with minimum inconvenience, even in a congested downtown area. Note the G-E submersible automatic network protector on the low-voltage end of the transformer.



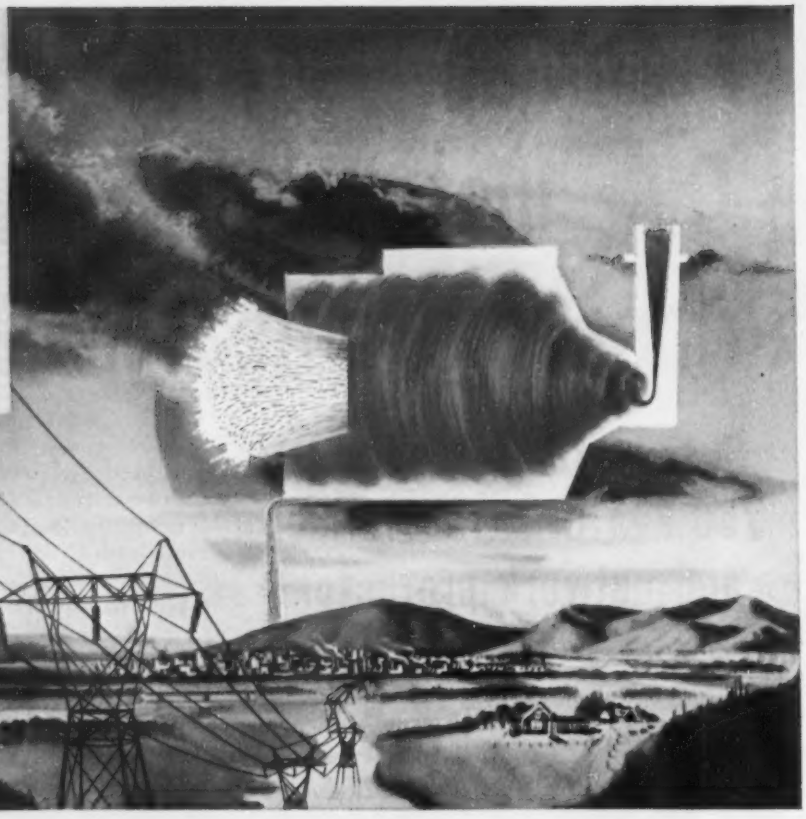
CENTERING UNIT in vault prior to cabling. Convenient location of cable terminals on G-E units makes minimum size vaults practical—simplifies connections for fast installation.

You can put your confidence in—

GENERAL ELECTRIC

Steam is literally the lifeblood of our American economy. Through it, the energy in our store of fuels is made available in useable form. Steam has always been taken for granted because it's cheap. But, with the depletion of top grade coals, with the increase in price of fuels generally, and with increasing construction and operating costs, major engineering concentration is required on the problem of . . .

keeping steam cheap



FOR THE WORLD'S MOST EFFICIENT ELECTRIC GENERATING UNIT

—The Cyclone Furnace

All power plants make kilowatts; here's one that's making history!

The entire nation will benefit when American Gas & Electric Service Corporation ushers in a new era of power progress with the installation of its revolutionary new steam-electric generating system at the Philo Plant of the Ohio Power Co., near Zanesville, Ohio. For the first time, boiler engineers will break through steam's critical pressure barrier to achieve unprecedented 5500 pounds pressure and 1150 F steam temperature. The new boiler and turbo-generator unit will produce 120,000 kw—three times the power in the same space as the system it replaces—and will use 45 per cent less coal per kilowatt-hour.

To fire B&W's unprecedented boiler, the Cyclone Furnace—in itself an outstanding development in coal-burning technology—has been chosen to provide maximum combustion efficiency and economy.

The Cyclone represents a vast simplification of the entire mechanism of preparing and burning coal—and, in one easy step, effectively solves the bothersome question of fly ash handling and emission from the stack. A high percentage of all bituminous coals in the United States can be burned efficiently in the Cyclone Furnace. It can handle a wide variety of coal from mines in all parts of the country. Regardless of where a coal-burning plant may be located, it will have an excellent competitive market in which to purchase coal suitable for firing in the Cyclone Furnace.

We will be pleased to discuss the Cyclone Furnace in terms of your specific public utility or industrial requirements and to submit data on the Cyclone's many advantages of particular benefit to you. The Babcock & Wilcox Company, 161 East 42nd St., New York 17, N. Y.

N-159

BABCOCK & WILCOX

BOILER DIVISION

Transformer Unit . .

. . . of Westinghouse hits record high in 1953. Division's head cites role of research

Continued rapid growth of the nation's electric power industry helped operations at the Transformer Division of Westinghouse Electric Corp to achieve an all-time peak during 1953, according to Frank L. Snyder, vice president in charge of the division at Sharon, Pa. Snyder made this disclosure in a year-end statement in which he also predicted that operations for 1954 are expected to reach almost as high a level. He said divisional net sales billed in 1953 were substantially higher than those billed in 1952.

Lauds Research . . . The coming year, Snyder said, promises to be one of outstanding achievements. This will be due in part, he continued, to extensive research in 1953 when Westinghouse further developed new lines of transformers. Through the principles learned as a result of the developments, he asserted that Westinghouse will be able to even further reduce the size and weight of many of its transformers. Because of 1953's engineering developments, he said, Westinghouse foresees transformers of much higher ratings than were ever before considered possible. He noted that the company now has orders for units rated at 315,000 kva.

Snyder said Westinghouse's other developments in 1953 included new voltage regulators and new completely self-protecting transformers.

Substantial Order Backlog . . . Though the present backlog of orders for the division is substantial in size, the Westinghouse official said there is an indication that the "mix" operations in 1954 will differ from that of 1953 in that some departments will be reducing the level of their operations while at the same time other departments will increase theirs.

The division's $10-million expansion program, involving additional buildings and general rearrangement of all manufacturing facilities, is slated for completion April 1. This expansion program will increase the division's overall capacity approximately 20%. However, employment for the division in the coming year is expected to be slightly lower than the 7,500 persons now employed.

Wooden Version of a New Generator

Three executives of General Electric Co's Turbine Division inspect full-scale wooden model of a portion of the first large liquid-cooled generator in the history of the electrical industry. Left to right are Glenn B. Warren, GE vice president and general manager of the Turbine Division; Charles E. Kilbourne, electrical engineer of the division; and H. Dana Taylor, manager-generator engineering, Large Steam Turbine-Generator Department.

The new generator will have an operating capacity of 208,000 kw. Manufacture of the unit for the Eastlake power plant of Cleveland Electric Illuminating Co will start early in 1954.

MANUFACTURING BRIEFS

General Electric Co expects to break ground early in the second quarter of this year for its new multi-million dollar Waynesboro, Va., plant. The new structure, designed to manufacture electronic speciality controls, will contain approximately 200,000 sq ft of floor space.

Blaw-Knox Co, Pittsburgh, has received orders from the Tennessee Valley Authority and Atomic Energy Commission. The TVA contract amounts to $2.6 million and covers piping to be fabricated for and installed at the agency's Gallatin, Tenn., steam power station, which will have two 250,000 kw generators. Field erection will begin early in 1955 and should be completed that year. The AEC order, which amounts to $1,159,061, is for 1,240 tons of prefabricated piping for use in the new gaseous diffusion plant being built for the commission at Portsmouth, Ohio.

Daybrite Lighting Co has officially opened in New York City its new offices and display rooms at 161 E. 42nd St. to serve the N. Y. area.

Plans to spend $2.5 million this year to expand its Appliance Division plant at Mansfield, Ohio, have been announced by Westinghouse Electric Corp. The expansion is the first step in a program to double production of major appliances there and to increase production of portable appliances.

Over $2 million will be spent for new equipment, but the plan also provides for a new four-story plant, which will provide an extra 34,000 sq ft of working area.

James R. Kearney Corp, St. Louis, has started construction of a 15,000-sq ft plant at Fayetteville, Ark., to make electrical equipment items. The St. Louis firm, which supplies fuses, transformers and other electrical equipment for utilities, will employ about 150 persons at the Fayetteville unit, which will serve as warehouse and distributing center for the Southwest.

Allis-Chalmers Manufacturing Co has completed plans for a $4,250,000 expansion of its 400,000-sq ft Terre Haute, Ind., works. A-C's plans call for an 84,000-sq ft addition which will make component parts for transformers, switchgear, and circuit breakers. Tools and equipment will account for the major portion of the cost of the new addition, which will increase the employee force of 1,300 by 170 workers. Construction, slated to start immediately, is expected to be completed late this year.

Low bid of $208,000 has been submitted by the British Thomson-Houston Export Co, Montreal, Can., to the city purchasing agent of Seattle, Wash., for four circuit breakers needed by City Light.

SALES ASSIGNMENTS

COMPANY STAFFS

Bailey Meter Co, Cleveland, has announced that P. T. Reuter will handle the managership of its Boston district office, which was moved to larger quarters at 230 Congress St., Boston 10.

General Electric Co's Carboloy Department has assigned managers to three newly organized districts: C. W. Powell will manage the Allegheny district at Pittsburgh; J. D. Kennedy, the South Central district at St. Louis; and H. H. Jason, New England district at Boston.

Reliance Electric & Engineering Co, Cleveland, has promoted C. V. Gregory to the newly created position of manager of district sales with headquarters in the home office. Succeeding Gregory as Pittsburgh district manager is Elwood H. Koontz, branch manager at Newark, N. J. Koontz's duties will be taken over by F. Raymond Obenchain, sales engineer there for the past three years. Wilmer K. Schlotterbeck, sales application engineer at Philadelphia for the past several years, was promoted to Buffalo (N. Y.) district manager to succeed C. B. Allen, Jr, who is being transferred to Detroit to assume the post of district manager there. Allen replaces J. L. Buell, Jr who has resigned after 18 years as Detroit district manager. Antony C. Schettler, sales application engineer at the Baltimore office, was advanced to branch manager there.

A. O. Smith Corp, Milwaukee, has named regional managers for its East and West Coast district offices. Walter W. Stake, formerly assistant general sales manager for the Permaglas-Heating Division in New York, was made regional manager for the Eastern District with headquarters in New York. Allen O. Dragge, who has had jurisdiction over the West Coast operations, was appointed regional manager of the Pacific Coast District at Los Angeles.

REPRESENTATIVES

Burndy Engineering Co, Inc, Norwalk, Conn., has designated Henderson Sales Co as its sales representative for the St. Louis, Mo., area to replace W. L. Rose, who is retiring as a sales representative after 45 years in the electrical field. Henderson Sales, located at 8131 Manchester, Brentwood, St. Louis, will handle the complete Burndy line of electrical connectors.

MEETINGS CALENDAR

Edison Electric Institute
Accident Prevention Committee, Hotel Statler, Boston, Jan. 18-19; Industrial Relations Committee, Joint Meeting with Personnel Administration Section, Southeastern Electric Exchange and Southwestern Personnel Group, Hotel Roosevelt, New Orleans, La., Jan. 21-22; EEI-AGA Taxation Accounting Committee, Arlington Hotel, Hot Springs, Ark., Jan. 27-29; Joint Meeting of EEI Meter-Service Committee and Association of Edison Illuminating Companies Metering and Service Methods Committee, Adolphus Hotel, Dallas, Tex., Feb. 3-5; Transmission and Distribution Committee, Hotel Cleveland, Cleveland, Ohio, Feb. 9-10; Electrical Equipment Committee, Sheraton Cadillac Hotel, Detroit, Mich., Feb. 15-16; Industrial Relations Committee, EEI Headquarters, New York, March 18; Sales Meeting, Edgewater Beach Hotel, Chicago, April 5-8; EEI-AGA Accounting Conference, Hotel Statler, Boston, April 12-14; Industrial Relations Committee, Netherlands Plaza Hotel, Cincinnati, Ohio, April 15; Annual Meeting, Atlantic City, N. J., June 1-4.

American Institute of Electrical Engineers
Winter General Meeting, Statler Hotel, New York, Jan. 18-22; Conference on Feedback Control, Claridge Hotel, Atlantic City, N. J., April 22-23; Northeastern District Meeting, Schenectady, N. Y., May 5-7; Conference on Telemetering, Morrison Hotel, Chicago, May 24-26; Summer General and Pacific General Meeting, Hotel Biltmore, Los Angeles, June 21-25.

Canadian Electrical Association
Eastern Zone Meeting, Chateau Frontenac, Quebec, Que., Jan. 18-22; Western Zone Meeting, Royal Alexandria Hotel, Winnipeg, Man., March 1-3; Annual Convention, Murray Bay, Quebec, Que., June 24-26.

Industrial Electrification Council
National Industrial Electric Heating Conference, Netherlands Plaza Hotel, Cincinnati, Ohio, Jan. 18-22.

New England Meter Engineers
Hotel Somerset, Boston, Jan. 21-22; Demand Register School, New England Power Bldg., Boston, Feb. 8-13.

***California Municipal Utilities Association**
1954 Annual Conference, Mission Inn, Riverside, Calif., Feb. 2-5.

Public Information Program
West North Central Region Meeting, Madison, Wis., Feb. 5.

Electrical Equipment Representatives Association
Winter 1954 Meeting, Biltmore Hotel, Los Angeles, Feb. 8-11.

Pennsylvania Electric Association
Winter Meeting, Transmission-Distribution Committee, Lord Baltimore Hotel, Baltimore, Feb. 11-12; Winter Meeting, Electrical Equipment Committee, Hotel Roosevelt, Pittsburgh, Feb. 25-26; Winter Meeting, Relay Committee, Benjamin Franklin Hotel, Philadelphia, March 4-5.

Public Utilities Advertising Association
Region 5 Meeting, Atlanta, Ga., Feb. 11-12; Region 1 Meeting, Mount Royal Hotel, Montreal, Que., Feb. 25-26; National Convention, Hotel Statler, Boston, May 13-14.

National Association of Purchasing Agents
Mid-Winter Conference, Public Utility Buyers' Group, Lord Baltimore Hotel, Baltimore, Md., Feb. 15-16.

National Adequate Wiring Bureau
10th Annual National Adequate Wiring Conference, La Salle Hotel, Chicago, Feb. 25-26.

Southern Safety Conference-Exposition
Kentucky Hotel, Louisville, Ky., March 7-9.

National Electrical Manufacturers Association
Spring Meeting, Edgewater Beach Hotel, Chicago, March 8-11.

*** North Central Electrical Industries**
17th Annual Electrical Industry Convention, Hotel St. Paul, St. Paul, Minn., March 21-24.

Southeastern Electric Exchange
21st Annual Meeting, Boca Raton Hotel, Boca Raton, Fla., March 22-24; Spring Meeting, Engineering and Operation Section, Sans Souci Hotel, Miami Beach, Fla., May 6-7.

American Power Conference
Sherman Hotel, Chicago, March 24-26.

Oklahoma Utilities Association
Annual Convention, Biltmore Hotel, Oklahoma City, March 25-26.

Northwest Public Power Association
Annual Convention, Winthrop Hotel, Tacoma, Wash., March 31-April 1-2.

Pacific Coast Electrical Association
Administration Services Section, Hotel Claremont, Berkeley, Calif., April 7-8; Annual Convention, Hotel Del Coronado, Coronado, Calif., May 19-21.

Illuminating Engineering Society
Southern Regional Conference, Roosevelt Hotel, New Orleans, La., April 8-9; Southwestern Regional Conference, Rice Hotel, Houston, Tex., April 11-14; Inter-Mountain Regional Conference, Denver, Colo., April 15-16; South Pacific Coast Regional Meeting, Museum of Art, San Francisco, April 19-20; Canadian Regional Meeting, King Edward Hotel, Toronto, Ont., April 28-30; Great Lakes Regional Meeting, Sheraton Cadillac Hotel, Detroit, May 3-4; Midwestern Regional Meeting, Hotel Jefferson, St. Louis, June 17-19.

A. & M. College of Texas
7th Annual Conference for Protective Relay Engineers, Department of Electrical Engineering, College Station, Tex., April 26-28.

Electrical Women's Round Table
1st Annual National Conference, Sheraton Hotel, St. Louis, May 14-15.

*** 1954 National Telemetering Conference**
Sponsored jointly by Institute of Radio Engineers, American Institute of Electrical Engineers, Instrument Society of America, and Institute of Aeronautical Sciences, Hotel Morrison, Chicago, May 24-26.

National Association of Electrical Distributors
Annual Convention, Atlantic City, N. J., June 6-11.

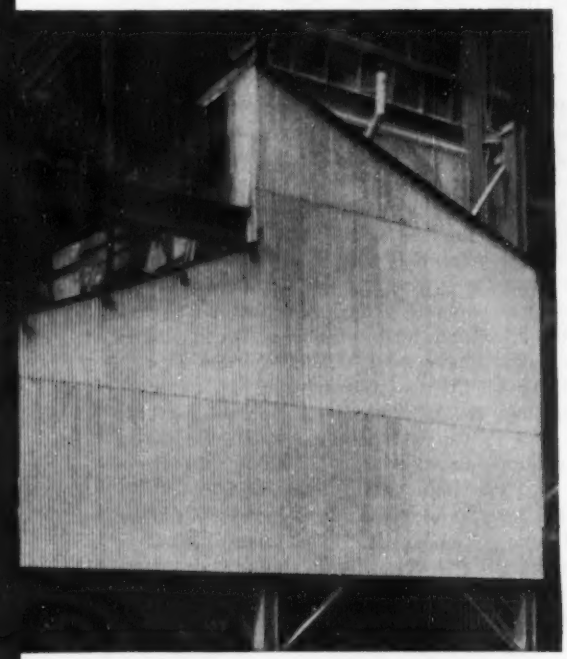
American Society of Mechanical Engineers
Semi-Annual Meeting, William Penn Hotel, Pittsburgh, June 20-24.

Michigan Electrical Association
Annual Convention, Grand Hotel, Mackinac Island, Mich., June 27-30.

***Addition this week**

Roof and walls of this ferromanganese cleaning plant of United States Steel Corporation at Duquesne, Pa., are Stainless Steel. The steam line to the cooling tower is ⅝" Stainless Steel piping to guard against corrosion inside and out.

Built for *maximum* resistance to gases, dirt and moisture with STAINLESS STEEL roof and walls



A closer view of the wall of the plant shows how the 24-gage corrugated Stainless Steel siding is applied.

By the very nature of its purpose, this building is going to take a beating. It houses a battery of electrostatic precipitators to clean gas from ferromanganese blast furnaces at Duquesne Works of United States Steel Corporation.

Ferromanganese cleaning involves much corrosive dust and fumes, in addition to the moisture and dirt generally found in industrial atmospheres. To give the building maximum life, it was constructed with a roof and walls of U·S·S Stainless Steel.

The Stainless Steel was used in the form of 24-gage corrugated sheets. Fastening hardware and flashing are Stainless Steel too.

In addition to their superior corrosion resistance, Stainless Steel walls and roofs offer many other advantages in industrial buildings. Erection is fast and goes forward in all kinds of weather. Maintenance is at a minimum with no painting required. And, of course, the life of the building is extremely long.

Give your buildings—warehouses, power plants, manufacturing facilities and even office structures—this long, maintenance-free life by specifying U·S·S Stainless Steel. If you would like more information on this type of construction, mail the coupon below.

United States Steel Corporation
Room 4238, 525 William Penn Place
Pittsburgh 30, Pa.

Please send me literature on Stainless Steel walls and roofs for industrial buildings.

Name ..... Title .....

Address .....

City ..... State .....

UNITED STATES STEEL CORPORATION, PITTSBURGH · AMERICAN STEEL & WIRE DIVISION, CLEVELAND · COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
NATIONAL TUBE DIVISION, PITTSBURGH · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. · UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

4-202

UNITED STATES STEEL

Duquesne's Rate Case Ends

Pennsylvania PUC not only denies company's request for a $4.7-million rate hike but cuts existing rates $1.9 million

Pennsylvania Public Utilities Commission has denied the Duquesne Light Co a $4,732,022-a-year rate increase and has found that existing rates to be excessive by over $1.9 million.

The PUC stated in its order that:

"Respondent's estimate shows the effect of the proposed tariff to be an increase of 8.29% for residential customers, 10.08% for small commercial and industrial customers, 4.23% for large commercial and industrial customers, and 5.15% for public street and highway lighting customers, with no increases for other electric utilities, railroads and railways, and other electric revenues, the overall composite increase being 5.97%, based on annualized revenues at Dec. 31, 1952."

Varied Rate Values . . . As to the rate base, the company's measures of value varied from a net original cost rate base determination of $255 million to a maximum of $444 million based on Reproduction Cost New less depreciation of a price level of Dec. 31, 1952. The trended original cost rate bases (less depreciation) varied from a high of $437 million, based on spot prices of Dec. 31, 1952, to a low of $326 million, based on a ten-year average of the 1943-52 price level.

The PUC, in its own findings, concluded that the original cost of the property amounted to $236 million while the R.C.N. level less depreciation amounted to $375 million. The commission's trended original cost rate base varied from a high of $370 million for spot prices as of Dec. 31, 1952, to $277 million for a ten-year average price level from 1943-52.

Fair Value . . . In its findings as to fair value of the company's property, the PUC stated:

"We will give the several measures of value found by us such consideration as may be proper and will recognize that respondent is a going concern. Including all elements of value, we find and determine the fair value of respondent's property, used and useful, in the public service to be $297 million at Dec. 31, 1952."

The foregoing determination of the company's fair value rate base was $16.5% above Duquesne's net original cost rate base and 26% over that set by the PUC.

Fair Rate of Return . . . As to the fair return, the commission stated that:

"Respondent claims 6.25% to 6.30% to be the fair rate of return based upon the weighted average composite (spot) cost of capital under market conditions early in March, 1953, '. . . having regard to the trend which was evident at that date' (Tr. 571)."

The PUC continued:

"Although the witness **Hopkinson of Drexel & Co** [name supplied] calculated the composite cost of the historical cost of debt and preferred stock capital and the current cost of common stock equity capital to be 5.623% and the current cost of capital to the 5.771% applicable to respondent's actual capital structure, he based his claimed rate of return primarily upon the claimed current cost of capital of 5.92% applicable to **a 'normal' structure** [emphasis supplied] (Tr. 629)."

The PUC, in arriving at the cost of money, stated that:

"For the purpose of this order, we use respondent's actual capital structure applied to capital costs heretofore determined to arrive at the composite cost of capital to respondent of 5.542% . . ."

As to the fair rate of return the PUC's order reads:

"Respondent's claimed rate of return of 6.25% to 6.30% was based primarily on its estimated current cost of capital of 5.92%. In regard to the difference or cushion of 0.33% to 0.38%, the witness stated and we agree that: 'The cost of new capital is closely related to the amount the company must earn to enable it to pay investors a sufficient return and offer sufficient protection to that investment to induce them to supply additional capital as required to enable the company to meet, and indeed to anticipate, the service needs of its territory. It is one of several factors to be taken into consideration in arriving at a fair rate of return.' "

The PUC continued:

". . . we find the fair rate of return for respondent to be 6% which, applied to our fair value finding of $297 million, produces a fair return of $17,820,000."

Depreciation . . . With regard to annual depreciation accruals the PUC, in disallowing the company's claim stated:

"Respondent submitted three witnesses contending that annual depreciation should be based on replacement cost and not on original cost of plant. To follow the claim of respondent through these witnesses would require respondent's customers to return to respondent not the cost of plant being utilized in providing service to them but the cost of the plant to replace the plant actually being used. To follow such a claim would require respondent's customers to provide a portion of the capital needed for the construction of the replacement.

"We have consistently found that annual depreciation should be based only on original cost, which findings have been upheld by the Superior Court of Pennsylvania . . ."

As to operating expenses, the company's claim of $36,832,595 was reduced to $36,737,997 by the Public Utilities Commission.

As to the operating revenues of the company the PUC found them to be $84,178,131 with the proposed rates. The PUC's own determination of allowable earnings giving effect to the 6% rate of return amounted to $77,518,493, or $6.659,638 less than the above revenues. In effect the PUC not only disallowed the proposed rate increase but also found the company's revenues under existing rates to be excessive by $1,927,638.

It is understood that an appeal of the case is under consideration at the present time.

FINANCIAL

Fears Puget Power Seizure

Whatcom PUD considers 5 Washington PUD's a threat to utility's 'private enterprise' status. Annual meeting called off

At least one Washington state PUD is unconvinced that Puget Sound Power & Light Co will continue to operate as an independent private utility.

That is the Whatcom County PUD of Bellingham, which has denied any common bond with other PUD's and which entered into the power business this year only to assure a $75 million oil refinery for the county.

Whatcom PUD Goes Into Business . . . When Puget Sound and the Bonneville Power Administration declared themselves unable to supply the 10,000-kw requirement of the new refinery, the Whatcom PUD agreed to supply the power, beginning next September. This will necessitate construction of a substation and 14 miles of transmission lines, at a cost of some $650,000, to pick up from BPA lines power that has been generated by the Pend Oreille PUD.

The picture now has changed, however, with Puget Power determined to stay in business, rather than sell to a group of five PUD's (not including Whatcom) or to merge with Washington Water Power Co. The company has notified the Whatcom commissioners it would be happy to accept the refinery contract, and build the necessary facilities if they will transfer to Puget Power the Whatcom PUD's contract with BPA and the Pend Oreille PUD.

Reluctant to Enter Field . . . The Whatcom PUD, never eager to enter the power picture, might have been expected to be happy to be relieved of the necessity of bonding the district for the construction program, but such so far has not been the case.

"We haven't been able to convince ourselves yet that we won't wake up some day and find that the PUD's have taken over Puget Power," said a spokesman for the Whatcom board. "We then would be in the soup for good. We just don't underrate the ability of Guy Myers (fiscal agent for the PUD's)."

The board believes, as a matter of principle, that the new refinery should be served by a private utility but added that, "until we are convinced to our own satisfaction that the future of Puget Power as a private operating company is assured, we don't want to be hurried into transferring our present power commitments."

In another development in the Puget Sound P&L controversy, Judge Charles Fairhurst in Suffolk County Superior Court, Boston, enjoined the utility from holding its annual meeting on March 22 until further order.

Court Inquiry . . . The action was taken to give the court time to inquire into a dispute between the Puget Sound management and a stockholders' committee seeking to elect a new board of directors favorable to a merger with Washington Water Power Co.

At the same time, counsel for Puget Sound and the stockholders' committee agreed that neither side will solicit stockholders' proxies for the annual meeting until further order of the court.

12-Point Program Is 1954 Goal of SEC's Chairman Ralph Demmler

During the coming year the Securities and Exchange Commission intends to direct its attention to:

1. A more vigorous and better co-ordinated enforcement program.
2. More effective co-operation between the commission and state securities administrators.
3. Assistance to the Administration and the Congress in the preparation and study of amendments to the statutes administered by the commission.
4. The possibility of adopting general rules to give greater effect to the exemption provided in the Public Utility Holding Co Act of 1935 for issues of state regulated utility companies.
5. A study of investment companies as authorized by Section 14(b) of the Investment Co Act of 1940.
6. Improved administration of Regulation A, the exemptive regulation for small offerings.
7. Substantial progress in completing the integration program under Section 11 of the Public Utility Co Act of 1935.
8. Rules or public releases covering interpretations which presently do not receive adequate public notice.
9. Consolidation and simplification of forms and elimination of duplicative reports.
10. More effective use of so-called identifying statements to disseminate information about securities during the waiting period.
11. Re-examination of the commission's policy of participation in private litigation.
12. A program to expedite disposition of contested matters which presently involve enormous expense to litigants and to taxpayers.

FINANCIAL BRIEFS

Public Utilities Commission of Ohio has said in a year-end release that "Electric power companies are expanding their plants so there may be some rate increase applications to put the companies in a better position to borrow money to pay for the improvements."

Chehalis, Wash., City Commission is considering an ordinance which would

boost its tax on Lewis County PUD bills from 3 to 5%. PUD has objected, declaring increased taxes defeat its purpose of providing low-priced power.

Harriman Ripley & Co and First Boston Corp made the winning bid of $112,106.94 or 16½¢ per share, for underwriting compensation for the purchase of any unsubscribed share of the 679,436 shares of common stock of Consumers Power Co not subscribed on the offering to the company's stockholders on 1-for-10 basis and to employees up to 100 shares each at $36.75 a share.

Nesbitt, Thomson & Co group has sold quickly an $8 million issue of British Columbia Electric Co 5% $50 par preferred at $48 a share to yield 5.20% . . . **Power Authority of the State of New York** has borrowed $1 million from five New York banks at 1¾% interest due Jan. 5, 1955. Purpose of loan is to continue and complete engineering surveys and plans for the St. Lawrence River project.

Private Placements—Upper Peninsula Power Co has sold privately $1 million first mortgage 4⅝% bonds due 1983, $1.5 million 5⅛% debentures due 1973, and 45,000 shares of common stock through Kidder, Peabody & Co . . . Upper Peninsula Generating Co has also placed privately through Kidder, Peabody & Co $5,050,000 first mortgage 4⅞% bonds due 1984 . . . Florida Power & Light Co will sell 62,500 shares of 4½% $100 par preferred stock to institutions through Glore, Forgan & Co.

Quarterly Common Dividend Increases . . . General Public Utilities Corp will pay 42½¢ a share on Feb. 15 as compared with 40¢ previously . . . Missouri Public Service will pay 45¢ a share on March 12 as compared with 30¢ in the previous quarter.

In an annual report to the Governor, Minnesota Railroad & Warehouse Commission has recommended expansion of its powers into the fields of gas pipelines, and power and light companies within the state.

If and when Missouri Public Service Co and Gas Service Co merge, the name chosen for the consolidated company will be Midwest Public Service Co.

Today in Utility Finance

YIELDS (%)

Quality	Bonds			Preferred Stocks			Common Stocks		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
DATE									
1954									
Jan. 7	**3.03**	**3.10**	**3.30**	**4.14**	**4.21**	**4.59**	**5.06**	**5.51**	**5.50**
Dec. 31	3.07	3.12	3.34	4.17	4.32*	4.62	5.07	5.57*	5.51
END OF QTR.									
4th 1953	3.07	3.12	3.34	4.17	4.32	4.62	5.07	5.57	5.51
3rd 1953	3.30	3.33	3.54	4.35	4.52	4.83	5.36	5.97	6.01
2nd 1953	3.34	3.46	3.64	4.47	4.70	4.88	5.52	5.93	6.10
1st 1953	3.15	3.23	3.39	4.16	4.41	4.66	4.95	5.24	5.50

Data: Reis & Chandler, Inc. * These figures would be 4.25% and 5.49% respectively if revision in composition of averages effective Jan. 7 had been applied.

EARNINGS

Company	Period Months Ended		Net Income 1953	Net Income 1952	Earnings Per Common Share 1953	Earnings Per Common Share 1952
California-Pacific Utilities	12	Nov.	$586,572	$537,359	$2.09(a)	$2.02(a)
Iowa Electric Light & Power	12	Nov.	2,792,501	2,488,522	1.58	1.38
Pennsylvania Power & Light & Scranton Electric	12	Nov.	17,40.,123	15,074,053	2.85	....

Notes—(a) Based on 228,839 shares in 1953 and 224,885 shares in 1952.

FINANCING

Company and Description	Amount of Offering (000)	Offering Price	Yield to Public
WEEK OF JANUARY 7—13			
Bonds			
Appalachian Electric Power—1st mtg 3¼% due 1983	$20,000	102.824%	3.35%
Public Service Co of Indiana—1st mtg 3¼% due 1984	25,000	102.625	3.24
Salt River Project, Ariz., Agricultural Improvement & Power District—electric revenues 4.3½, and 3¼% due 1960–82	5,000	various	2.70-3.50
Preferred Stock			
Central Illinois Electric & Gas—15,000 sh 4.80% cum $100 par	1,500	$100.00	4.80%
Common Stock			
Consumers Power—679,436 sh (being offered commonholders on a 1-for-10 basis, record Jan. 7 to expire Jan. 22; employees will be given right to unsubscribed shares up to 100 shares each)	$24,969	$36.75	5.99%
SCHEDULE FOR JANUARY—FEBRUARY—MARCH—APRIL			
Bonds			
Ohio Edison—1st mtg due 1984	$30,000	.....	Jan. 19
Glendale, Calif.—electric revenues due 1955–74	1,000	.....	Jan. 25
Louisville Gas & Electric—1st mtg	12,000	.....	Feb. 16
Public Service Co of Oklahoma—1st mtg due 1984	12,500	.....	Feb. 16
Essex County Electric—1st mtg due 1984	5,000	.....	Feb. 17
Suburban Electric—1st mtg due 1984	4,000	.....	Mar. 3
Alabama Power—1st mtg due 1984	17,000	.....	Mar. 16
Georgia Power—1st mtg due 1984	11,000	.....	April 6
Community Public Service—1st mtg due 1984	3,000	.....	.....
Debentures			
Otter Tail Power—convertible debs 4¼% due 1964 (to be offered commonholders on the basis of $4 principal amount of debs for every one share of common, record Jan. 25 to expire Feb. 8)	$2,500	$100.00	4.25%
Utah Power & Light—debs	15,000	.....	.....
Preferred Stocks			
Kansas City Power & Light—70,000 sh 4.20% $100 par	$7,000	$101.00	4.16%
Iowa-Illinois Gas & Electric—40,000 sh cum $100 par	4,000	.....	Jan. 19
Mississippi Power & Light—60,000 sh $100 par	6,000	.....	Feb. 2
Common Stocks			
Ohio Edison—527,820 sh (being offered commonholders on 1-for-10 basis, record Jan. 14 to expire Jan. 29 with an oversubscription privilege)	$18,870	$35.75	6.15%
Utah Power & Light—about 200,000 sh	.....	.....	.....
Kansas City Power & Light—225,460 sh	7,327	32.50	5.54
Black Hills Power & Light	300(e)	.....	.....
Northern Indiana Public Service—318,000 sh (to be offered commonholders on a 1-for-10 basis, record Jan. 8 to expire Feb. 3)	.....	.....	.....
POSTPONED, UNSCHEDULED, AND/OR UNDER CONSIDERATION			
Bonds			
Southwestern Public Service—1st mtg	$12,000(e)	.....	.....
Houston Lighting & Power—1st mtg	25,000	.....	.....
Public Service Co of Colorado—1st mtg	15,000	.....	.....
Brazos River Authority, Tex.—electric revenues	66,000	.....	.....
Jersey Central Power & Light—1st mtg	6,000(e)	.....	.....
Metropolitan Edison—1st mtg	3,500(e)	.....	.....
New Jersey Power & Light—1st mtg	3,000(e)	.....	.....
Pennsylvania Electric—1st mtg	12,500(e)	.....	.....
Pacific Gas & Electric—1st mtg	.....(a)	.....	.....

Notes—(a) Amount undetermined; and (e) Estimated.

THIS IS A SUPERSONIC REFLECTOSCOPE

Defects in porcelains of such design that electrical test does not also measure mechanical security, are searched out by this equipment.

In operation, the reflectoscope applies a supersonic sound wave to the end of a porcelain piece. The wave, like light, tends to travel in a straight line—and to be reflected by a change in medium. Picked up by a searching crystal, the wave and its reflections are reported on a cathode ray tube.

If the piece on test is sound, a single reflection of the square wave will appear (as photographed in the inset above). If a crack is encountered, a subordinate and intermediate reflection will be reported.

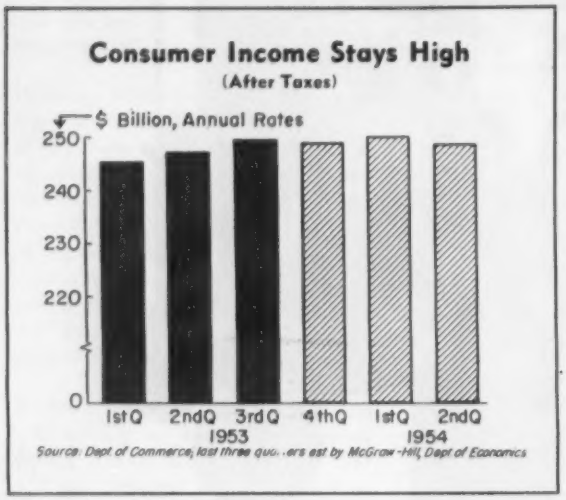
Not all Lapp porcelain is tested on the reflectoscope. For most porcelain designs, the Lapp electrical test is also a severe mechanical test. Line Posts and Station Posts are invested on a grounded table, with a chain dropped to the bottom of the hole, and subjected to vigorous flashover; any crack results in immediate electrical failure. Suspension insulators are similarly tested. Bushings are flashed from a live internal stud to a grounded external sleeve. Some pieces, such as chemical porcelain valve bodies, which have no electrical duty whatever, are subjected to electrical test as surest protection against hidden mechanical flaws.

However, some pieces, such as solid rods, will not reveal mechanical flaws on electrical test. So that we will ship no porcelain that has not been thoroughly tested, Lapp paid $10,000 for this instrument, and uses it, in a slow and expensive test, where necessary. We think it's a good investment in our comfort—and our customer's—to know that every piece of Lapp porcelain shipped is a sound porcelain.

Lapp Insulator Co., Inc., Le Roy, N. Y.

Lapp

ELECTRICAL BUSINESS OUTLOOK



Residential Power Use to Rise in First Half

Residential power use will make good gains in early 1954, if present indications are borne out. It looks as if home completions and appliance sales will stay at high levels at least through the first half of the year—despite the slow slide in general business that's been under way for the past few months (EBO—Dec. 21). Here's why:

Consumers will have more money for new appliances and houses. Consumer incomes may actually be falling—**before taxes**—during early 1954. But the $3 billion cut in income taxes, effective Jan. 1, will boost income **after taxes** to a record high in the first quarter. Consumers will probably have a bit less money to spend in the second quarter than the first. But they will still have more than in early 1953. And Congress may write some changes into the tax laws that will boost consumer buying power by another $1.5 billion or so as of April 1.

Willing to Spend . . . Consumers are in a mood to spend their money, too—especially for appliances. A study by the Survey Research Center, University of Michigan, showed last fall that consumers thought it was a good time to buy. And they particularly thought it was a good time to buy appliances. These surveys have been excellent indicators of future consumer spending in the past.

Last year, Detroit got an unusually big share of the consumers' dollar. Auto production and sales were second only to the record year of 1950. There's not much doubt that new cars got some of the money that might otherwise have gone to appliances. This year, everyone—including auto makers—expects lower automobile sales. That means more money freed to be spent for appliances, if consumers want to spend it that way.

Credit was fairly tight through all of the first half of 1953. It's eased greatly since, and is expected to remain easy through early 1954. This may help appliance sales—and it will certainly help sustain sales of new houses. However, the great size of consumer debts already outstanding—now approaching $30 billion—may keep people from borrowing as heavily in 1954 as in 1953.

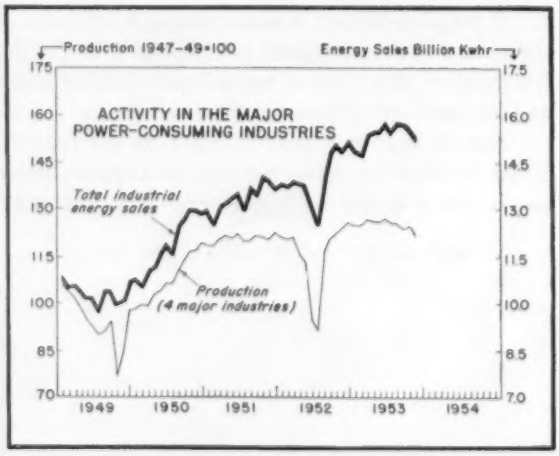
Home construction is running steadily at a rate of around one million homes a year. It's expected to drop off later in 1954 (EBO, Oct. 26). But, in the first half, it should stay close to present levels. Easier mortgage credit will be a big help. And the Republican Administration in Washington intends to help keep the rate up any time it shows signs of slipping.

Steadier Cost of Living . . . The consumers price index—"cost of living"—has just about reached its peak, according to most judgments. It may even drop a little in 1954. And if consumers don't have to worry so much about constantly rising prices of necessities like food and clothing, they may be able to spend a little more for the things they really want—like appliances.

All in all, this adds up to prospects for a good half year of gains in residential power use. It probably won't be so good as early 1953, when both housing activity and appliance sales were unusually high. But it should not be much below 1953 either.

The trend after mid-1954 is a lot harder to foresee. Right now, it seems likely that incomes will continue to slip. Certainly, there's no sign today of anything happening to reverse the gradual slide in economic activity as early as midyear.

Revised Index . . . The monthly index of activity in major power consuming industries (see chart below) has been revised. The new index represents a larger and better sample than the old one. Industries included in the index are steel and non-ferrous metals, paper and pulp, chemicals and petroleum and coal products.



Durasheath: all-purpose power cable

In heavily industrialized areas, utilities can cut their installation and maintenance costs with light, tough DURASHEATH*. This flexible, easily handled cable may be run buried in the earth, in ducts or overhead (or in any combination) without needless, time-consuming jointing. Its light weight and flexibility make duct pulling fast even in zero weather. Aerial assemblies go faster. Linemen like to work with it. And you need stock only one cable type.

* * *

As one of several types of ANACONDA power cables, DURASHEATH is available in all sizes, single or multiconductor, copper or aluminum, from 600 to 15,000 volts. It is thoroughly dependable for industrial plants, railroads, series or multiple street lighting, traffic control, and airport† lighting, residential primaries and secondaries, as well as for such uses as Type USE cable for underground service entrance. *Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.*

*Reg. U. S. Pat. Off. 53811

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Primary and secondary distribution cables • building, machine tool, control and communication wire • portable cords and cables • bus-drop cables • apparatus cables • copper, aluminum, copperweld conductors • wire and cable accessories.

†*when ordered to CAA Specifications L-824*

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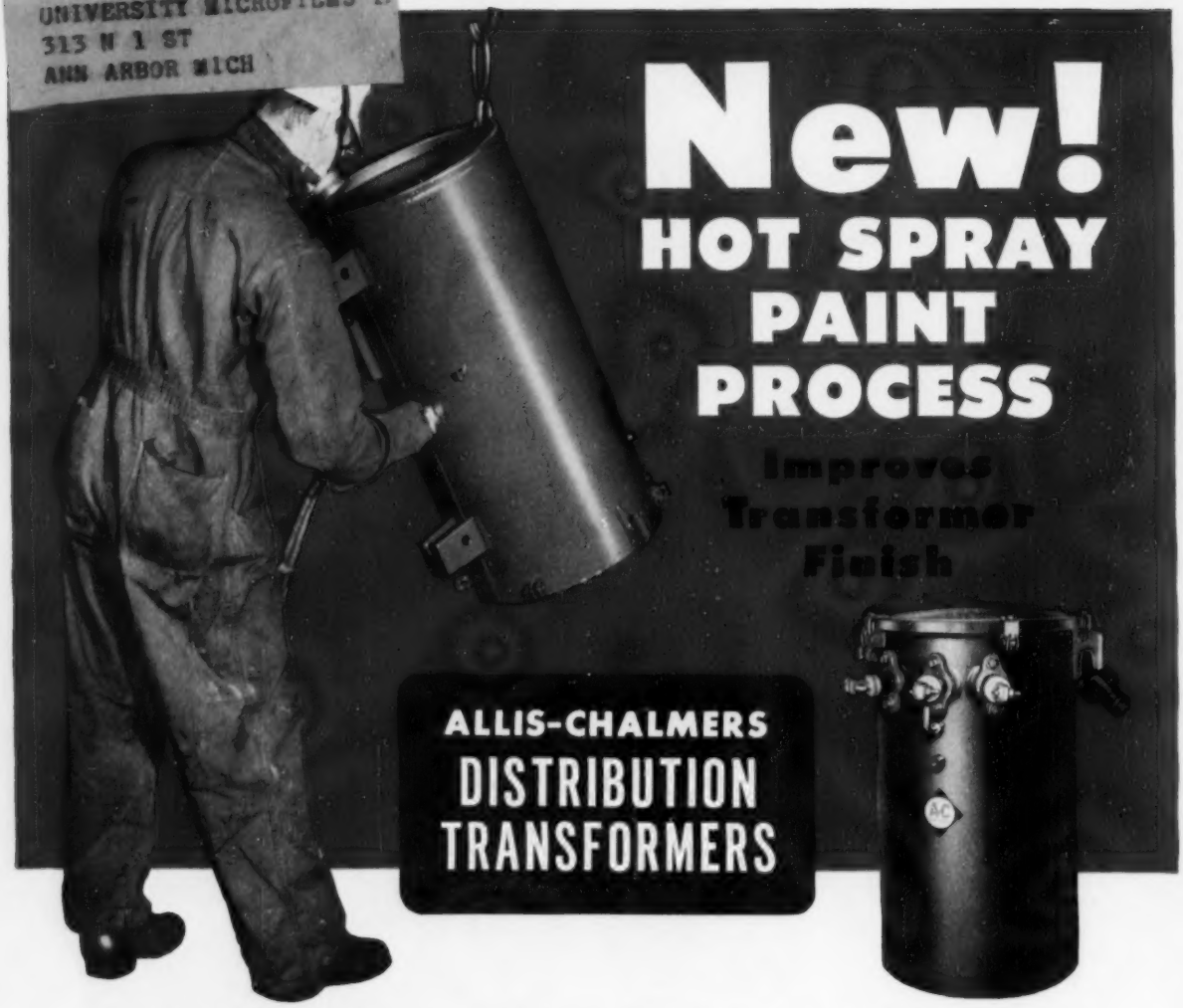

A new Hot Spray System now used by Allis-Chalmers effectively substitutes heat for solvents in painting, to produce a higher quality finish than conventional spray processes. A smoother surface is achieved with a uniform coating that offers greater resistance to contamination and corrosive action. Pole type distribution transformers in ratings through 50 kva get this new surface treatment.

Paint Heated to 160 F

The fact that cold paint is thicker than paint kept at normal room temperature is widely recognized — cold paint takes more solvent to make it flow and atomize. In the new Allis-Chalmers hot spray process, alkyd-resinous paint is heated to 160 F. Only 15% solvent is required, compared to the 40% solvent needed in conventional spraying at normal temperatures. Since there is far less solvent to evaporate, shrinkage after the paint is applied is greatly reduced. And better filling properties, brought about by improved flow and atomization, result in a smoother surface with greater gloss and excellent coverage.

Tests Prove Value

Tests conducted at Allis-Chalmers and at the Sub-Tropical Testing Laboratories at Miami, Florida show conclusively that tanks first cleansed and treated by Spra-Bonderizing and then Hot Spray painted have a superior protective surface. Test conditions included salt spray, humidity and sunlight as well as industrial atmosphere.

For more information on Allis-Chalmers new hot spray system as applied to distribution transformers, contact your nearby A-C district office or write Allis-Chalmers, Milwaukee 1, Wisconsin. A-4201

ALLIS-CHALMERS